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ORIGINAL LECTURES.

ON PSORIASIS.

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Reported by WILLIAM WHITFORD.

GENTLEMEN,—This little girl, 10 years of age, comes to us to-day with a history of having had an eruption upon her body continuously for four years. Before investigating the case, however, let me enumerate some of the more important characteristics of the disease known as "psoriasis," of which this is a rather well marked case. It is not a contagious disease; it appears at any age, and in both sexes. It will occur in those of the most robust constitution as well as the delicate. The eruption always has a tendency to general or symmetrical distribution,—that is, we are liable to find an eruption on any part of the body, or, more correctly speaking, we find it upon all parts of the body at the same time. The eruption may be comparatively scarce in certain localities, though we find some patches all over the body. For instance, we find some patches on the scalp, on the extremities, and on the trunk. The disease has a tendency to chronicity, lasting in some instances for many years. The case before us has existed for four years. The lesions in the disease—by that I mean the diseased patches—are almost always round, at least they have that tendency, and vary in size from a pin-head to a silver dollar, although they usually average from the size of a ten-cent piece to about a quarter of a dollar, as in the plate I now show you. This plate represents a case of psoriasis, and thus gives you an idea as to the size of the lesion. I may next mention one of the most important characteristics of the disease,—viz., the scales covering the patches: they are always white, shining, silvery scales. The skin between each one of these little patches is always healthy,—that is, the disease terminates abruptly at the margin of the patch; it does not extend beyond the patch, as in certain other diseases. Now, when these white, shining, silvery scales are removed we find a red patch underneath; and upon a little closer examination we find some pin-point oozing of blood. There is no more important symptom in psoriasis than the one I have just alluded to (these pin-point-size droplets of blood). I may mention further with regard to the scales, that at first sight or examination we do not always find or observe their white, shining, silvery character, but by gently rubbing the patches with the finger-nail this character is clear at a glance. Another very important characteristic of the disease is that it is dry from first to last; we never have any history of moisture, as in certain other diseases of the skin. This is an important point to remember, because by knowing all the characteristics of the disease it will be impossible for you to fail in making a correct diagnosis, and there is no other way to make a diagnosis than by remembering these points. We have very few subjective symptoms in this disease: by this I mean we have very few symptoms which are manifested by the feelings of the patient, such as itching, pain, or similar sensations. This feature is so marked that the patient might have an eruption on the back or some other region and not know it, merely because there is no itching sensation, or at least comparatively none when compared with some other diseases. For this reason it is always well to examine the entire body, because the patch exhibited to you might only be the simplest indication or portion of the actual disease. The patient may have the eruption all over the body and not know it. Another very important feature is that, although it has a tendency to general distribution, it prefers certain localities of the body. The localities it favors are the extensor surfaces, such as the knees and elbows, etc. The eruption does not always remain in the same outline, but it may take on certain other shapes; the lesions may run together into one conglomerated mass, hence various names have been given to indicate the different appearances of the disease. For instance, when the eruption is very fine it is called psoriasis punctata; when a little larger in size, psoriasis guttata; when it is still larger in size, as we usually find it, it is termed psoriasis nummularis, or round, coin-size patches; and when many of these lesions all run together in one mass, it is designated psoriasis diffusa. You will re-

member that I said this disease is a symmetrical or generalized one, and that it prefers certain localities. I will mention two localities where it almost never occurs, and these are upon the palms of the hands and soles of the feet. We may say it must be rare that an uncomplicated case of psoriasis affects the palms and soles.

Now, all the symptoms I have just alluded to are not always present in every case of this disease, otherwise we would never have any trouble in making a diagnosis. We find present, however, in the case of this little girl many of the characteristics previously referred to.

It is evident from her having had it for four years that it is a very chronic disease. She gives us no history of contagion. You will notice there is a tendency to rotundity of the lesion, and that the lesions have a well-defined contour. By carefully scratching the surfaces of these scales with your finger-nails you will find they assume the white, shiny character. By removing some of the scales you will find the red, bleeding patch underneath. You must scratch it closely in order to get down to the bottom, and then you will find the characteristic pin-point-size droplets of blood, which characteristic of itself alone is almost pathognomonic. That, in addition to the white, shiny character of the scales, will enable you to almost make a good diagnosis, but it is never a good rule to follow: always sum up the diagnostic points. You will observe we have no moisture whatever. The lesions everywhere you see them are the same; we find no papules, pustules, vesicles, or anything of that kind.

Now, these characteristics are indicative of psoriasis, although you may meet with some of them in certain other skin-diseases; and it is therefore well to make a differential diagnosis, knowing that many of the symptoms found here appear in other affections of the skin. The diseases that resemble, to the greatest extent, psoriasis, are eczema, syphilitic eruption, favus, seborrhœa, and tinea tonsurans.

In psoriasis as distinguished from eczema we have no subjective sensations, while in eczema we have great itching. In psoriasis the disease is dry from first to last, while in eczema we have a history of moisture; psoriasis prefers the extensor surfaces, eczema the flexor. The patches in psoriasis are well defined, while in eczema they gradually fade away. The scales in psoriasis are white and shiny, while in eczema we may have crusts instead of scales. We have red, bleeding patches in psoriasis which we do not have in eczema. Again, eczema is to a certain extent local, while psoriasis has a tendency to general distribution. Another important differential diagnostic point is that in psoriasis, while the patches may be thick on the scalp and fringe the brow, they spare the face; the face, on the other hand, is a favorite locality for eczema. The palms and soles are very rarely involved in psoriasis, while these parts are very commonly affected by eczema. In psoriasis the skin is healthy between the lesions, while in eczema such is not the case. The lesions in psoriasis are never different in any respect from those you see in this well-marked typical case, while in eczema we may have all forms of lesion, as vesicles, papules, pustules, etc.

Psoriasis as distinguished from Syphilitic Eruptions. — We have, first, the white, shining scales; in syphilis the scales are not so shiny and white, and we may have crusts instead of scales in syphilis. The scales are loose in psoriasis, while in syphilis they are more adherent. The patch in psoriasis is always as you observe it in this case, covered completely with scales; there is not a particle of the red patch to be seen; while in syphilitic eruptions the scales are fewer and do not cover the entire patch. Here we have a syphilitic eruption; but it has not advanced to that stage where it might be mistaken for psoriasis, because the scales have not accumulated. When they do accumulate, they never cover the entire patch; the margin of the patch may be seen in its red condition. The patch in psoriasis is a bright red, while in syphilitic eruptions it is a copper color or dark red; no inflammatory color about it. We have the pin-point bleeding in psoriasis when the scales are removed, to which I have previously referred, that we do not have in syphilis. Again, as regards the lesions, we apply the same contrast as between eczema and psoriasis: viz., in psoriasis they are uniformly the same, while in syphilitic eruptions we may have many forms of lesions. It is true when the lesions first appear in syphilis they resemble those of psoriasis; but in a few months they change their character and go on to pustulation, ulceration, and destruction of the skin. The

palms and soles are nearly always affected in syphilis, and almost never in psoriasis. We have the dry character in psoriasis, while in syphilis we may have various forms of moisture, such as the formation of pus, exudation of serum, etc. Psoriasis is never a destructive disease, while syphilis always, sooner or later, results in destruction of the tissues.

A differential diagnosis between psoriasis and syphilis would hardly be necessary if syphilitic patients were always able to give a syphilitic history; but sometimes this is not the case. In the case before us, however, it would not be necessary to make a differential diagnosis between psoriasis and syphilis, for the reason that the disease has existed four years and has always remained continuously and uniformly the same; whereas in syphilis such a thing would be impossible. The lesions are well formed in syphilis, and in a few months change from one form into another. We have pustulation, ulceration, and destruction within a very brief period.

Where psoriasis is mostly confined to the scalp we have to differentiate it from certain other diseases of the scalp, such as favus, tinea tonsurans, and seborrhœa.

Favus may be at once excluded by the yellow color of the crust, by the brittle, broken-off condition of the hairs, and by their falling or pulling out readily. Favus is a disease confined almost invariably to the scalp. Further, there is this difference between the two: favus never extends down and fringes the brow as in this case, a condition which is very common in psoriasis.

Now, with regard to tinea tonsurans or ringworm of the scalp, we have a brittle, broken-off condition of the hairs; the disease is not uniformly and symmetrically spread over the scalp as psoriasis is. Besides, this disease and favus being parasitic diseases, we have the history of contagion and the discovery of the parasite with the microscope.

As regards seborrhœa, that is simply a disease of the sebaceous glands, a disease diffusely spread over the scalp; doesn't spare a particle of it: in other words, we do not have the character of healthy skin between the lesions. It affects the scalp diffusely, not in elevated patches, but is uniformly and diffusely spread all over it; it never extends down over the brow to the non-hairy portions. The scales are greasy in character; sometimes there is considerable loosening of the hair, a condition we never meet with in psoriasis of the scalp.

As regards treatment, I always think when we have made our diagnosis that most of our work is done. It may be very difficult to *cure* a disease in some cases, but it is not a difficult matter to apply the remedies laid down in the text-books: this is a very simple matter when you know what the disease is. Now, in this disease, occurring as it does in the most robust as well as the delicate, constitutional measures have but very little effect. The treatment, therefore, must be mainly local. Certain remedies, however, are given sometimes internally: for instance, arsenic given in the form of Fowler's solution. I mention this remedy because it is recommended in the text-books by various authors, rather than because I think it advisable and useful myself, for I rarely use it. You may give it in ordinary doses, five to ten drops three times a day.

As regards local treatment, I may mention first the use of *chrysarobin*, and, second, *pyrogallic acid* and various mercurial ointments. I would like you to bear in mind, however, the chrysarobin for the treatment of psoriasis, because I consider it the best. It is a specific local remedy; but before applying it let me mention some preliminary measures. With these scales covering the patch almost impermeably, it would be useless to apply any specific medication on top of them: it would not penetrate to do any good. The first thing to be done is to remove the scales. This applies to almost every skin-disease. How shall we do this? The best means of doing it, I think, is as follows. Oil the parts twice a day with any oleaginous preparation, some penetrating oily substance being preferable. I might state that vaseline is not good for this purpose: it is not a pure fat; it is gummy and resinous, and does not penetrate well. Olive-oil, or the new remedy talked of, called *lanoline*,—in fact, any oleaginous preparation to loosen and soften these scales,—may be applied twice a day; then at night a hot bath, with plenty of soap, and a good brush or rough towel to take off the scales. The next day repeat the same process, and by the second night you may have most of the scales off. Apply then the chrysarobin, twenty grains to the ounce of some inert fat or ointment;

it may be mixed with vaseline, but pure lard is better; rub it twice or three times a day. Every patch requires its individual treatment.

These scales have a tendency to re-accumulate, and in the course of a few days it will be necessary to repeat the other treatment: that is, the oiling and washing of the parts. Then again go on with your specific medication in the form of chrysarobin-ointment as before, and thus keep the process going on alternating until the lesions have dried down and the scales are not reproduced, which is sure to take place in due time. The pyrogallic acid may be used in the proportion of a drachm to the ounce, first getting rid of the scales, as previously stated.

As regards the prognosis: the disease is a chronic one. It can always be readily cured by being very thorough. This is to a certain extent beyond the control of the physician, however, because the patient or attendants have to do most of the work,—the rubbing and washing, etc.,—and if this is not thoroughly carried out you will fail in getting a speedy cure. Once the disease is cured or healed, it is all right for a time; but, without good care of the skin, it is liable to return again. This is an important feature in the prognosis, and its liability seems to be greater in cold than warm weather. Measures which tend to keep the skin active are indicated with a view to preventing a return of the disease.

ORIGINAL COMMUNICATIONS.

A CONSIDERATION OF THE BACTERIA OF SURGICAL DISEASES.

Read, by invitation, before the American Surgical Association

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(Continued from page 48.)

INOCULATION experiments have been made in considerable number to test the pathogenic powers of the various organisms which I have had under observation. Here, again, the method employed has been that of Koch. The place selected for the inoculation has been first thoroughly cleansed and then soaked in a solution of corrosive sublimate (one to one thousand), the hands of the operator have been sterilized with the same solution, and for inoculation a syringe like the one I have here has always been employed. It may be readily taken apart and cleansed, has no packing or other parts to become foul, and may be subjected to any temperature required for sterilization. In all cases these syringes have been subjected to 150° C. for an hour just before being used. The material for inoculation has been prepared in the case of cultures in gelatin media by simply melting the gelatin, pouring it into a sterilized capsule, and then using the required quantity in the syringe shown; or, when the cultures were upon nutrient agar-agar, by placing a portion of the culture in boiled distilled water and using this in the same way as the liquefied gelatin cultures.

The animals used were all selected for their apparent condition of good health, had all been under observation for some time before the operations, many of them having been kept in the country miles away from other animals, and were all kept under the very best possible hygienic conditions. The result of these precautions is seen in the fact that in no single case did the post-mortem examination reveal any abnormal condition of affairs that might not fairly be attributed to the activity of the bacteria which had been injected.

The animals employed were guinea-pigs. Mice were excluded because symptoms produced in them are not fairly comparable to those obtained in larger animals, and rabbits could not be obtained in Boston at any price during the time that I was carrying on my inoculation experiments.

The bacteria with which I have experimented are the following:

The Staphylococcus aureus and albus.
The Staphylococcus pyogenes citreus.
The Erysipelas coccus.
The Streptococcus cereus flavus.
The Streptococcus pyogenes.
The Micrococcus pyogenes tenuis.
The Bacillus pyogenes fluorescens.

The records of the inoculation experiments are as follows:

Inoculation experiments with the Staphylococcus pyogenes aureus.

I. A full-grown healthy guinea-pig inoculated in a vein of one leg made prominent by partial constriction. Two drops of a pure culture in gelatin of the sixteenth

generation of the Staphylococcus aureus from the first case reported (ununited fracture of the arm) were employed. The cultivations had been conducted out of the body for over a year. Death occurred in less than twelve hours. The autopsy showed very little change in the internal organs: the heart was much distended and full of fluid blood. Cover-glass preparations showed the blood to contain numerous micrococci, and cultivations made from the blood in nutrient gelatin showed the presence of the Staphylococcus aureus.

II. An adult guinea-pig inoculated with the same culture as the preceding, under the skin of the abdomen, two cubic centimetres of the cultivation in gelatin being used. Killed in ten days. An abscess the size of a marble, filled with thick yellowish pus, was found just under the point of inoculation. Cover-glass preparations of this pus and sections of the abscess-wall showed the presence of large numbers of micrococci. Cultivations were made in gelatin and upon agar-agar (37° C.) from the abscess, from the blood, and from the peritoneum. Very free growth of the Staphylococcus aureus was obtained from the first, but neither the cultivations nor cover-glass preparations from the blood or peritoneal cavity showed the presence of any bacteria whatever.

III. A guinea-pig inoculated with the same amount and material as the preceding, except that the inoculating needle was plunged deep into the abdominal cavity. Dead in ten hours. Examination showed only a marked redness about the point of inoculation, and that the needle had not penetrated the intestines. The heart was much distended with fluid blood. Cultivations were made from the point of inoculation, the peritoneal cavity, and the blood of the heart, and liver, and spleen, in gelatin and agar-agar. No growth appeared in any of the tubes except those sown from blood, and this growth proved to be the Staphylococcus aureus.

The contrast between the results of the last two experiments is very marked,—in the first case the organisms being found only in the abscess and not in the blood, and in the second case being only in the blood and not about the point of inoculation. In the first case the effect was purely local, and in the second it was general and of a septicæmic character.

IV. Staphylococcus pyogenes aureus from a perinephritic abscess (Case II.), seventeenth generation, cultivated for over a year. Two cubic centimetres of nutrient gelatin containing a culture were injected under the skin of the back of a guinea-pig. Killed in four days. An abscess about an inch long by one-half inch broad, and three lines in thickness, full of thin yellow pus, was found just beneath the skin. Cultivations made from this showed the presence of the Staphylococcus aureus, and microscopic examination showed masses of micrococci in the pus and in the abscess-wall. Cultures from the blood gave no result whatever.

V. The same amount and material were employed as in the preceding experiment, and the inoculation was made subcutaneously over the abdomen. In two days death occurred. Section showed a very marked congestion of all of the abdominal viscera, with an abscess about one-half inch in diameter at the point of inoculation. Cover-glass preparations of the pus and sections of the abdominal wall showed the presence of masses of micrococci, whilst cultivations in nutrient gelatin and on agar-agar gave abundant growth of the Staphylococcus aureus. Cultures of the same organism were also obtained from the blood, and cover-glass preparations of the blood showed it to contain a number of micrococci.

VI. Staphylococcus aureus from a perinephritic abscess (Case IV.), eighteenth generation, cultivation extending over eight months. Two cubic centimetres of a culture in nutrient gelatin were injected into the abdominal cavity of a healthy guinea-pig. Killed on the fourth day. The animal was moribund. Section showed the presence of an extensive purulent peritonitis, and microscopic examination of the pus together with cultivations made from it demonstrated the presence of the Staphylococcus aureus. Cultures from the blood and microscopic examination of the same revealed absolutely nothing abnormal; no bacteria were found.

VII. Staphylococcus aureus. The same experiment as the preceding was performed in the same way, and with the same result, except that the animal was killed on the second day. The inflammatory process with the suppuration seemed to be, if anything, more extensive. The same results were obtained by microscopic and cultivation experiments; the Staphy-

lococcus aureus was found in the pus but not in the blood.

VIII. Staphylococcus aureus from a psoas abscess (Case XIV.), the twelfth generation, cultivation out of the body extending over seven months. Four cubic centimetres of a solution in distilled water of one drop of a pure culture in nutrient gelatin were injected into the abdomen of a healthy guinea-pig. In two days a swelling the size of an English walnut could be felt under the point of inoculation. Killed at the end of twelve days. The remains of an abscess were found, the cavity having almost closed; only a few drops of thick yellowish pus were obtained. Microscopic examination of this, however, showed it to be a mass of micrococci, with a small proportion of cell-nuclei. Cultivations from this material gave only a feeble growth, which was afterwards determined to be the Staphylococcus aureus. Cultures from the blood remained sterile.

IX. Staphylococcus aureus. The same generation and solution as in the preceding case were employed, but only one cubic centimetre was injected. There was no result observed. The animal was killed on the fourth day, when only a slight redness at the point of entrance of the inoculating-needle could be made out. Cultures made from the blood and from the peritoneum remained sterile.

X. Staphylococcus aureus. Two cubic centimetres of the solution used in the two preceding cases were injected into the knee-joint of a full-grown guinea-pig (right posterior). Death on the following day. Cultures from the blood and from the joint gave a free growth of the Staphylococcus aureus; the joint itself showed no suppurative action, but was the seat of intense redness, with great swelling and some infiltration of blood. A small vessel had undoubtedly been ruptured during the inoculation, and some of the infective material had in this way got into the blood-current.

XI. Staphylococcus pyogenes albus from an abscess at an ununited fracture of the humerus (Case I.), fifteenth generation, cultivated out of the body for thirteen months. Two cubic centimetres of a culture in nutrient gelatin were injected under the skin of the back of a full-grown guinea-pig. On the second day a slight swelling was observed at the point of inoculation. The animal was killed on the fourth day, when section showed nothing abnormal in the abdominal or thoracic viscera. There was an abscess under the skin at the point of inoculation, about two centimetres in diameter, filled with quite fluid pus of a distinctly lighter color than that found in any of the preceding experiments. There was not much change in the tissues about the abscess; a very slight swelling, extending one or two millimetres from its boundaries, being all that was noticeable. Cultivations and microscopic examinations showed the presence of the Staphylococcus albus in the pus and in the abscess-wall, but not in the blood.

XII. Staphylococcus pyogenes albus. The same generation and cultivation were employed as in the preceding case. A drop of a culture in nutrient gelatin was placed in ten cubic centimetres of water, and two cubic centimetres of this were injected subcutaneously over the abdomen. The animal was killed on the fourth day, but no bacteria were found, and the point of entrance of the inoculating-needle was barely visible except upon close examination.

XIII. Staphylococcus pyogenes albus from a perinephritic abscess (Case II.), twelfth generation. In this and the following experiment, XIV., two cubic centimetres of a pure culture in nutrient gelatin were injected subcutaneously over the abdomen. Both guinea-pigs were killed at the end of a week. In both were found small abscesses at the point of inoculation from one to three centimetres in diameter, and filled with a thin yellowish-white pus. Cultivations showed the presence of the Staphylococcus albus in both, but in neither of them was anything found in the blood.

XV. Staphylococcus pyogenes albus from a diphtheritic vagina (Case VI.), thirteenth generation, cultivated outside of the body for nine months. A minute portion of a cultivation in nutrient gelatin (one-half of a cubic centimetre), with two cubic centimetres of freshly-boiled distilled water, was injected subcutaneously in the right abdominal region of a guinea-pig. A small lump was felt under the point of inoculation upon the following day. The animal was killed at the end of ten days. The lump had apparently decreased in size, for upon section it was found to be barely as large as a pea, and contained a few drops of thin pus. Microscopic ex-

amination showed that there were large numbers of micrococci in the pus and in the walls of the abscess. Cultures in nutrient gelatin and upon agar-agar showed that they were the Staphylococcus albus.

XVI. This experiment was a simple repetition of the preceding. The same culture and the same amount were used in the same way, and the results were precisely the same.

XVII. Staphylococcus pyogenes albus, fourteenth generation, from a case of diphtheria of the vagina (Case VII.), cultivated outside of the body for over nine months. One cubic centimetre of a solution of a culture upon agar-agar in distilled water was injected deep into the muscle of a leg of a guinea-pig. The animal was killed at the end of six days, when a clearly-defined abscess, about three centimetres in diameter, was found lying between the muscles, with practically no inflammatory tissue surrounding it. The pus was of the usual character, fluid, and of a rather light yellow color. Cultivations made from it gave colonies of the Staphylococcus albus, and microscopic examinations showed many micrococci in the pus and abscess-walls. Neither of these methods of investigation gave any result when applied to the blood and internal organs.

XVIII. Staphylococcus pyogenes albus. The same cultivation and from the same source was employed in this as in the preceding case. A larger amount, however,—five cubic centimetres,—was injected subcutaneously in the left abdominal region. The next day a very marked swelling could be seen, and upon the third day this swelling broke through the skin and commenced to discharge. Section showed a large abscess just below the point of inoculation. Cultivations gave the Staphylococcus albus and two varieties of bacteria, which were probably the result of contamination from the air, especially as sections of the abdominal wall showed micrococci only.

XIX. Staphylococcus pyogenes albus cultivated from a psoas abscess (Case IX.), fifteenth generation, propagated outside of the body for more than nine months. One cubic centimetre of a culture in nutrient gelatin was injected under the skin of the back of a guinea-pig. The animal was killed on the sixth day, when an abscess the size of a small marble was found at the point of inoculation. Cultures from the pus gave a free growth of the Staphylococcus pyogenes albus; nothing was found in the blood and internal organs.

XX. and XXI. The same cultivation was used in the same quantity for inoculation into the abdomen of two other guinea-pigs. They were examined on the fifth day, and in both of them localized abscesses were found at the seat of inoculation, which were shown to contain the Staphylococcus pyogenes albus by cultivation experiments and by microscopic examination of the pus and of the abscess-walls.

XXII. Staphylococcus pyogenes albus from a psoas abscess (Case XV.), fourth generation, grown outside of the body for about three weeks. A guinea-pig was inoculated on the top of the head with two cubic centimetres of a culture of this organism in nutrient gelatin. A slight swelling the size of a pea made its appearance at the end of the first twenty-four hours. Examined on the third day, an abscess about two centimetres by three in dimensions was found just under the skin, and not involving any of the deeper tissues. It contained the Staphylococcus pyogenes albus, as demonstrated by cultivation experiments.

XXIII. and XXIV. The same organism from the same source carried through four more generations, making the eighth, was injected into the abdominal cavity of two guinea-pigs, one cubic centimetre being used. Examination upon the seventh day. In one of the animals a small abscess, the size of a pea, containing a few drops of light yellow pus, was found lying just below the stomach. The abscess was clearly defined, and the neighboring structures were not involved. In the other animal an abscess about twice the size of the preceding was present just above and in front of the bladder. This also was as definitely defined as the other. Cultivation experiments showed the presence of the Staphylococcus pyogenes albus in both lesions.

XXV. Staphylococcus pyogenes albus (Case XVIII.) from an abscess of the inguinal glands, third generation, cultivated out of the body for three weeks. A guinea-pig was inoculated with one cubic centimetre of a culture of this organism in nutrient gelatin. The inoculation was subcutaneous and in the dorsal region. The animal was killed on the sixth day. An abscess three centimetres in diameter was found under the skin at the point of

inoculation, and microscopic examination showed the walls and the pus to be full of micrococci, which upon cultivation were seen to be the Staphylococcus albus.

XXVI. The fourth generation of the same organism employed in the preceding experiment was used to inoculate a guinea-pig in the abdominal cavity, one cubic centimetre of the culture in nutrient gelatin being the quantity injected. It was killed on the third day, when, as in the other cases, an abscess was found lying in the abdominal cavity just anterior to the kidney and without implication of any of the surrounding tissues. Cultures from the pus it contained showed the presence of the Staphylococcus pyogenes albus; cultures from the blood gave no result.

XXVII. This experiment was the same as the preceding, and gave the same results in every particular.

XXVIII. Erysipelas coccus (Case V.), twenty-second generation, cultivated outside of the body for more than a year. A minute portion of a colony on nutrient agar-agar was diffused in sterilized distilled water, and two cubic centimetres of the mixture were injected into the skin of the top of the head of a guinea-pig, which had been previously shaved and washed with corrosive sublimate. A marked redness made its appearance on the following day, accompanied by much swelling of the skin. An incision into the skin was made, and cultivations from the edges of the wound gave a plentiful growth of the Erysipelas coccus.

XXIX. and XXX. The same generations and material were used in both cases. The inoculations were made subcutaneously in the abdominal region in guinea-pigs; they were followed by some swelling and tenderness of the skin and general languor and disinclination to movement. Section on the third day showed marked emaciation everywhere, and much congestion of the skin of the abdomen, with some œdema. Cultures made from the skin showed the Erysipelas coccus in abundance, and sections of the infiltrated tissue were found to contain numbers of these organisms lying in the lymph-channels and between the cells of the deeper layers.

XXXI. Staphylococcus pyogenes citreus (Case III.), twentieth generation, cultivated out of the body for over a year. Two cubic centimetres of a culture in nutrient gelatin were injected into the abdominal cavity of a guinea-pig. The animal was killed on the fourth day, when a slight infiltration about the point of inoculation was found, but no suppuration and no bacteria could be demonstrated anywhere in the animal's body.

XXXII. The same material in the same amount was employed for injection into the abdominal cavity of a second guinea-pig. The animal was killed on the second day, when an abscess the size of a pea was found among the intestines, which were adherent to its borders, and the whole abdominal cavity was much congested. Cultures from the pus in the abscess and from the blood gave colonies of the Staphylococcus pyogenes citreus.

XXXIII. A small portion of a culture of the same organism upon nutrient agar-agar was mixed with four centimetres of sterilized distilled water, and two centimetres of the mixture were injected under the skin of a guinea-pig in the abdominal region. The animal was killed on the third day, when an abscess about two centimetres in diameter was found at the seat of inoculation. Cultures from the pus of this gave colonies of the Staphylococcus citreus, but nothing was found in the blood.

XXXIV. Staphylococcus cereus flavus (Case XIV.), seventh generation, cultivated out of the body for six weeks. This organism is one described by Passet ("Untersuch. ü. die articl. der eitrigen Phlegmonen des Menschen," Berlin, 1885), and which he considers to be active in the production of suppurative processes. He was, however, unable to produce any specific results in inoculation experiments with it, and the two which I made likewise gave negative results. The experiments were alike in character, and consisted in the injection into the abdominal cavity of guinea-pigs of two cubic centimetres of a culture in nutrient gelatin. Section of the first on the third day after the inoculation showed no result whatever, and cultivations from the blood and abdominal fluids failed to show the presence of any bacteria. The (XXXV.) second guinea-pig, killed on the second day, gave equally negative results, neither macroscopic, microscopic, nor bacteriological observations showing the presence of anything abnormal. The negative evidence to be offered in the case of this bacterium

does not, therefore, permit us to say that it has any pathogenic properties which can be demonstrated by ordinary methods; the only fact which is known is that of its rather uncommon occurrence in suppurative processes. Passet's specimen was found in a case of chronic suppurative periostitis of the ulna in a phthisical male subject twenty-seven years of age. Mine occurred in the case of psoas abscess in a child which was supposed to be connected with disease of the spine.

XXXVI. Streptococcus pyogenes (Case XVI.), sixth generation, cultivated out of the body for six weeks. One cubic centimetre of a culture in nutrient gelatin was injected into the shoulder of a guinea-pig. In two days, examination showed extensive infiltration of the muscles about the point of inoculation, with free suppuration and a collection of pus in the axilla. Cultures from the places affected gave colonies of the Streptococcus, and microscopic examination of the pus showed the organism in large numbers.

XXXVII. and XXXVIII. One cubic centimetre of the seventh generation of the same organism was injected into the abdominal cavity of two guinea-pigs. They were found almost moribund on the morning after the inoculation. Section showed an extensive inflammation over the whole abdominal cavity, with slight suppuration compared to the extensive nature of the process. Cultures from this region and from the blood of the heart gave abundant growth of the Streptococcus.

XXXIX. The same generation as was employed in the last two cases was used in this one. A very minute portion of a colony upon agar-agar was mixed with water and injected subcutaneously into a guinea-pig. Section upon the third day showed an extensive suppurative infiltration beneath the skin, extending out in all directions from the point of inoculation. The lymphatics all through the abdominal cavity were much congested, as were the spleen, liver, and kidneys. Cultures from the pus and from the blood in each of the organs, as well as from the heart, gave free growth of the Streptococcus pyogenes.

XL. Micrococcus pyogenes tenuis (Cases XVII. and XVIII.). Cultures of this organism were made as related in the account of the cases from which they were obtained. The fourth generation from (Case XVII.) an abscess of the arm was inoculated (one cubic centimetre of culture in nutrient gelatin), after cultivation for three weeks, subcutaneously in one guinea-pig, with no result. The third generation, from Case XVIII., a "bubon d'emblée," was injected in the same quantity and in the same way into a guinea-pig. Section in three days showed a very slight infiltration of the tissues about the point of inoculation, but cultures from this situation remained sterile. Microscopic examination showed a few of the organisms lying in the infiltrated portion of the tissues; so very few, however, as to be exceedingly difficult of detection.

In speaking of Case XV.—a psoas abscess in a child—mention was made of an organism which was found in the cultivations from that source which presented certain peculiarities under cultivation which I believe have not yet been spoken of by other observers. It first attracted attention by the peculiar green fluorescence which it imparted to the gelatin culture-medium throughout the entire diameter of the test-tube, whilst it did not liquefy the gelatin, in this respect differing from the bacillus of green pus, which does produce liquefaction of that material. The only other organism with which it can be confounded by the macroscopic appearances of its cultures is the *fluorescent bacillus*, which produces the like pigmentation of the gelatin-culture medium. This color extends beyond the limits of the colony, and bacteria are not found in it, and it seems to be due to the action of some product of the growth of the organism upon the nutrient material. In fact, so far as I have yet investigated this bacterium there appears to be no difference between the appearances of its cultures in nutrient gelatin, agar-agar, and blood-serum, the main point being that, so far as I am aware, the fluorescent bacillus has no pathogenic properties, whilst the organism which I am describing seems to have a very active influence upon guinea-pigs. Microscopically, the differences are marked, however, for this organism is a short bacillus, appearing singly, in pairs, and in chains from 0.3 μ to 0.4 μ in length, whilst very often its appearance in the tissues is that of a long rod, it being exceedingly difficult to decolorize the chain in this situation just enough to show the individual members. It grows

well at the ordinary temperature of the room, much more rapidly at 37° C. It does not liquefy gelatin, but produces a grayish-white line in the track of a needle, and in a few days a marked greenish-yellow fluorescence extending throughout the substance of the nutrient material. On agar-agar it produces in from thirty-six to forty-eight hours a grayish-white colony, elevated above the surface of the material, which has a peculiar soft, glistening appearance. The same greenish-yellow fluorescence makes its appearance throughout the substance of the culture medium. Plate-cultures made in nutrient gelatin show round points of a whitish color in two days or more; the gelatin is not liquefied, and very soon presents the same greenish-yellow fluorescence as when the cultivations are made in test-tubes.

The limits of time at my disposal have been so narrow that I have not been able to investigate this organism as thoroughly as I should wish. What I have said of it is merely a preliminary description, which I hope to fill out more in detail at a future time, and will merely mention, in addition, the inoculation experiments which I have made with it.

A guinea-pig was inoculated in the abdominal region (subcutaneously) with two cubic centimetres of the sixth generation of this organism in nutrient gelatin. It died on the following day. On section four to six hours after death, there was no localized suppuration, but the entire front of the body was as dry as if there had never been any fluids there. The skin could be readily lifted from the underlying tissues without any dissection whatever, and the muscles, particularly the pectorales, were as distinct from each other as if they had been carefully separated and all the intermuscular substance removed. In fact, the appearances were those of commencing putrefaction; there was a slight œdematous condition of the subcutaneous cellular tissue of the back. Cultures from this œdema, from the blood of the heart, and from incisions in various organs, gave colonies of the organism of which we are speaking. A little later, eight guinea-pigs were inoculated in the same way as the preceding, with the eighth generation of this bacterium. Section, in from four to six days, gave uniformly the result which is illustrated in these specimens. Nothing was found at the seat of the inoculation, but in every case the liver and spleen were found to be enlarged and the seat of a greater or less number of small abscesses. Occasionally the kidney seemed to be somewhat swollen also, but no abscesses were to be seen. Cultivations from the blood and from the seat of inoculation always remained sterile. Colonies from these abscesses always produced the peculiar fluorescence and microscopic appearances which I have attempted to describe. These include all the experiments which I have yet made in this direction. I have thought it well to speak of them here, because they seem to bear out my assertion that the end is not yet in regard to the isolation of new species of bacteria connected with the suppurative processes in man, and because I thought it might interest the members of this Association to have these facts presented to them.

The conclusions which may be drawn from the work here reported are as follows:

I. The cultivation experiments conducted over so long a space of time, with the successful inoculations at the end of that time, indicate very plainly the retention of the pathogenic power of these organisms indefinitely. Their virulence is just as great at the end of a year, and after being passed through a large number of generations, as it is when taken from their original birthplace.

II. Their permanence of form is also well demonstrated, their microscopic appearances and peculiarities under cultivation undergoing absolutely no alteration.

III. In order to obtain either a modification of their pathogenic powers or of their morphological properties,—if this is possible at all,—some different methods of observation must be used than those which have hitherto been employed.

IV. The probabilities indicate that work in this direction is not likely to be attended with much success: *a*, because no modifications have yet been observed, and, *b*, because prophylaxis furnishes the easiest and most generally applicable safeguard against the activity of these lower forms of life.

V. So far as the experiments go, they tend to show that no form of the suppurative process in man is unattended by bacteria, and that the inoculation in the lower animals of pure cultures of these

bacteria is followed by more or less acute and extensive suppuration.

VI. This conclusion—that of the dependence of the suppurative process upon the activity of bacteria—is very strongly supported by the most recent evidence of the best equipped workers in the field of bacteriological research.

VII. Very different clinical phenomena may be produced by the same organism; all of these phenomena, however, coming under the general head of the inflammatory and suppurative processes.

VIII. The differences in the results produced by the same micro-organism in different individuals depend upon causes foreign to the bacterium itself.

IX. These differences are the result of differences in the amount of the infectious material received into the system, and of the locality or lesion by which it gains access, and also by variations in individual condition,—the "personal equation" being a very large factor in making up the sum of any results in bacteriological work.

Certain investigations upon the resistance to various destructive reagents of some of these forms of bacteria have been made by Passet (*l. c.*). The organisms used were mainly the Staphylococcus pyogenes aureus and the Streptococcus pyogenes, these being selected as the most common and the most active of their class; and the reagents employed were salicylic and carbolic acids and corrosive sublimate. The results indicated the superiority of corrosive sublimate as a destructive agent, six drops of a one-per-cent. solution of this material preventing the development of either of the bacteria mentioned in ten cubic centimetres of nutrient gelatin, whilst it required twenty-five drops of a five-per-cent. solution of carbolic acid or one hundred drops of a solution of salicylic acid (one to three hundred) to do the same thing.

REPORT ON THE PROGRESS OF OTOLOGY.

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PAINLESS OR ONLY SLIGHTLY PAINFUL ULCERATION AND PERFORATION OF THE MEMBRANA TYMPANI, PROBABLY OF A TUBERCULAR ORIGIN.

DR. ALBERT H. BUCK (*New York Medical Journal*, August 21, 1886) during the past year has observed three cases with the above-named features, which he believes to have been characteristic of tubercular origin.

His conclusions respecting the distinguishing features in tubercular inflammation of the middle ear, in its incipient stages, are—

1. The tendency to localize itself in the vicinity of the upper and posterior portion of the membrana tympani. Whether the disease originates in the tympanic mucous membrane, in the fibrous structures of the membrana tympani, or in the bone of the immediate vicinity, Dr. Buck is unable to say, though he suspects that in some cases the bone-substance is the starting-point of the disease.

2. The marked insignificance of the pain, or even its entire absence.

3. The intolerance of any but the simplest and gentlest local remedial measures.

Dr. C. J. Blake, of Boston, in a letter to Dr. Buck, *à propos* of this paper, furnishes some new data, and suggests an explanation of the preference shown by the disease for the upper region of the tympanic cavity.

He has had several cases of purulent inflammation of the middle ear accompanying pulmonary tuberculosis, and characterized by the following symptoms:

1. Painless course of the inflammatory and destructive process, which occurred in the upper portion of the tympanic cavity, beginning with congestion of the inner end of the external auditory canal and membrane of Shrapnell and circumjacent region, followed within forty-eight hours by œdema of the parts mentioned, ulcerative perforation of the membrane of Shrapnell, rapid sloughing, and free purulent discharge.

2. But two of the cases were examined for bacilli in the discharge from the ear, and in neither case were bacilli found.

Dr. Blake thinks the initial impulse to the implication of the middle ear, occurring usually in the upper part of the tympanic cavity, comes from vaso-motor inhibition, reflexly from the lung-disease in that tract supplied largely by the tympanic branch or branches of the carotid, rather than, as Habermann * supposes, from infection from the sputa.

TREATMENT OF SUPPURATION OF THE TYMPANIC CAVITY.

Dr. C. Miot, in an article read before the French Otological and Laryngological

* Präger Med. Wochenschrift, No. 6, 1885.

Society, April, 1886 (*Annales des Maladies de l' Oreille*, etc., July, 1886), makes some interesting and valuable suggestions regarding the treatment of suppuration of the middle ear. He is not entirely in favor of either an exclusively moist or dry treatment, but seems to rely upon the instillation of drops for the cure of this disease rather than upon the insufflation of powders. He then mentions some of the solutions which have proved most useful in his hands. The best antiseptics are not always the most efficacious remedies in this disease, according to his observations. Preference is given to a strong decoction of poppy-heads, to which one part of boric acid is added to each one hundred parts of the fluid, in order to prevent the decomposition of the decoction. Solutions of cocaine rapidly calm the ear-pain in the majority of cases, but they sometimes augment the congestion of parts already inflamed, by paralyzing for too long a period the nervous supply.

In the preparation of astringent and antiseptic solutions preference is given to those made with pure glycerin, because they do not readily undergo changes and are tolerated by the mucous membrane of the ear.

As examples are given—

1. Borax 1 to 3 gr., 30.
2. Subacetate of lead 1 to 3 gr., 30.
3. Sulphate of aluminium 1 to 2 gr., 30.
4. Crystallized phenic acid 3 to 30 gr., 30.

To these solutions chloral may be added in varying proportions in order to render them more efficient.

5. Water oxygenated to seven volumes (formula of Dr. Baldy) and mixed with three, five, or ten parts of water.

Caustic Solutions.—As instillations are employed one-twentieth to one-tenth aqueous solutions of nitrate of silver, or a one-fifth to one-third of chromic acid. For touching diseased surfaces, one-tenth to one-half strength solutions of nitrate of silver, and of chromic acid from one-third to saturation, and also a saturated alcoholic solution of crystallized phenic acid.

Substances which make the most efficacious powders for insufflation are boric acid, iodoform, sulpho-carbolate of zinc, and sugar (*candi*),—the former either separate or commingled with sugar or magnesia. Powdered sugar acts well as a detergent upon surfaces covered with granulations. Iodoform and sulpho-carbolate of zinc are of service in strumous cases, in which the mucous membrane granulates easily and becomes fungoid. We should be on our guard when using iodoform, and cease employing it as soon as it seems to produce constitutional disturbances, especially in the digestive tract.

Indirect Means.—In acute cases, with pain, abstraction of blood by means of leeches is considered more prompt than irrigation by hot water.

We cannot agree with the author in his views as to the beneficial effect of derivatives on the mastoid (blisters, tincture of iodine, and the galvano-cautery) in controlling chronic suppuration and the growth of granulations in the middle ear.

General Treatment.—It is believed that suppuration of the tympanum can be cured in the majority of cases by local treatment. General treatment is useful only in modifying the diathesis of the subject, and to prevent relapses or to render them less frequent.

The treatment of adjacent parts which influence the state of the ear is considered an absolute indication. Suppuration of the tympanic cavity must, of course, be considered in its chronic and acute stage. The latter must be modified at once, as can be done by the use of antiphlogistic methods.

When the perforation is small, the inflammation may abate with ordinary treatment. On the contrary, if the running from the ear persists, with exacerbations more or less frequent, the perforation should be enlarged, in order to facilitate the escape of pus and the ready treatment of the drum-cavity.

In cases of simple otitis media suppurativa without much swelling of the mucous membrane, solutions of borax, subacetate of lead, and of sulphate of alumina, as well as insufflations of powdered boric acid when the discharge is not copious, may be employed. When the mucous membrane is more thickened, the same solutions, with the addition of chloral, may be used, alternating their application every eight or ten days. When powdered boric acid is to be used, it must be put into the canal in quantity sufficient to exclude all air, and renewed according to demand.

In cases of small granulations on the surface of the auditory canal, the membrana tympani, or the mucous membrane

of the drum-cavity, it is recommended to lightly scarify and apply caustic solutions,—a method, in our opinion, devoid of any merit, as insufflations of boric acid, either alone or associated with hydrastin or resorcin, will accomplish their destruction more easily and simply. The cure the author attributes to the scarification is most probably due to the alkaline washes and the use of borax and resorcin solutions, and the final dressings with powdered boric acid.

Polypi should be promptly removed, and "some hours afterwards or the next day the pedicles should be cauterized with chromic acid, carbolic acid, nitrate of silver, or the galvano-cautery, according to the effect desired." Why this delay of hours in touching the pedicle is advised we are not informed, but we believe it an unusual delay. In the interval of the cauterizations, which are recommended from every two to ten days, the instillations already named are advised, and, when the discharge becomes slight, the insufflation of powdered boric acid.

In the chronic state the perforation may be narrow and indicative of different conditions. Such cases are divided by the author into several categories.

In the *first* group the suppuration has lasted for many years, and has never ceased, notwithstanding the prolonged and rational treatment. In such instances it is fair to assume the presence of a sequestrum or of granulations which maintain the discharge. Before, however, instituting any special treatment for their removal,—like, for example, sulphurous acid, as recommended by Andeer,—we are advised to prescribe the astringent solutions considered the best by Miot,—viz., sulphate of alumina and chloral. The discharge may cease in a few days with this treatment.

In a *second* group a discharge may have existed for a long time, and about the edges of the perforation there may be a polypoid mass. Upon the destruction of these granulations by astringent solutions the discharge ceases in a few days.

In a *third* group a neoplasm in the drum-cavity may have extended through the perforation, and have developed in the auditory canal. After removing all the growth obtainable outside of the drum, and cauterized the remnants in the drum-space, the neoplasm may reappear notwithstanding numerous applications of the galvano-cautery. Sometimes a more energetic effect is obtained by the use of crystallized carbolic acid, a less efficient one by chromic acid. If the masses still grow afresh, the perforation in the membrana must be enlarged by means of the galvano-cautery, according to Miot, and then we shall be able to get at the polypoid growth and destroy it.

In the *fourth* group not only the membrana flaccida (Shrapnell's membrane) is destroyed, with neighboring parts, but also very often the upper wall of the osseous canal near the drum is eroded. These suppurations are very fetid. If treatment is not soon followed by relief, the following course is recommended. A delicate and flexible laminaria probe is introduced into the drum-cavity and passed in all directions. Generally neither carious bone nor polypi are met, but a soft, pultaceous, very fetid, purulent mass, resembling softened tubercle, filling the entire drum-cavity. As it is not easy to get this mass from the drum-cavity, a small counter-opening two to three millimetres wide should be made with the galvano-cautery, which will permit of still further examination of the tympanic cavity with a probe, but also to inject an alkaline wash or an antiseptic morning and evening.

The following are recommended:

1.—Tinct. of iodine, 4 grms.;
Distilled water, 40 grms.;
Iodide of potash, 1 grm.;
Rectified alcohol, 2 grms.

2.—Sulphate of alumina, 1 grm.;
Distilled water, 40 grms.;
Hydrate of chloral, 0.03 grm.

3.—Crystallized carbolic acid, 3 grms.;
Pure glycerin, 30 grms.

If these preparations do not give relief in a few weeks, there should be no hesitation in employing injections of iodine or of nitrate of silver in solution, in strength of $\frac{1}{40}$ to $\frac{1}{20}$, taking care to neutralize the excess of caustic and to wash out the masses of chloride of silver, as they are considered irritants. By a repetition of the caustic injections, and alternating them with astringents and antiseptics, and "by the employment of revulsives on the mastoid," it is possible to check discharges of long duration. In the *fifth* group the

membrana may be perforated in more than one spot, and the introduction of a probe sometimes reveals the presence of a sequestrum acting like a foreign substance. In such an instance the portion of the membrane connecting the two perforations should be incised and the sequestrum removed.

EXSECTION OF THE MALLEUS.

Kretschmann has reported three cases of exsection of the malleus, during the past year, for caries (*Universitäts-Ohrenklinik zu Halle*, 1885; *Archiv für Ohrenh.*, Bd. xxiii., July, 1886).

The first case was that of a man 44 years old. In addition to the caries of the hammer there was a perforation in Shrapnell's membrane, and a second one beneath the end of the manubrium. The suppuration was slight, but fetid. The patient complained chiefly of tinnitus and dizziness, in addition to hardness of hearing. The malleus, with the entire remnant of the membrana tympani, was removed without anæsthesia. The hammer, examined carefully after removal, was found to be carious throughout. The subsequent treatment consisted in syringing through the Eustachian tube. The dizziness and tinnitus ceased after this operation. In fourteen days the patient ceased to return for observation.

The two other cases were those of young girls 16 years old, in whom the entire membrana tympani was wanting. The fully-exposed malleus was in a horizontal position and was *strikingly white*. At the end of the malleus there was found on several occasions a drop of pus.

In one of these cases the removal was effected with difficulty, without any noteworthy effect upon the suppurative process; and in the other case the operation was not fully completed.

Dr. Samuel Sexton, of New York (American Otological Society, July 20, 1886), has recommended

A NEW OPERATION FOR THE RADICAL CURE OF CHRONIC INFLAMMATION OF THE MIDDLE EAR-TRACT.

The author, having observed that in a number of cases where the transmitting mechanism had been lost a spontaneous cure of the purulent running ensued, concluded to imitate the curative action of nature and remove the ossicles, in order to insure thorough drainage from the tympanic attic and other parts of the tympanum.

The operation was tried on a case of long-standing purulent inflammation of the attic of the tympanum. In order to avoid the danger of using an ordinary lamp in connection with the administration of ether, an electric lamp was employed. Since then Dr. Sexton has performed the operation, as he informs me in a recent letter, in thirty cases.

The first step in the procedure is to separate the membrana flaccida (Shrapnell's membrane) from the edge of the auditory plate, and to remove any portion of the membrana vibrans still adherent to the auditory ring. If the malleus and incus remain *in situ*, it is well to divide the tendon of the tensor tympani, if still adherent.

The chorda tympani is then divided, if present, where it enters the tympanum at the pyramid, and also at its exit into the canal of Huguier. The long process of the malleus, with the chorda, may also be detached and removed from the glenoid fissure. The detached portions may be removed with forceps. It will be frequently found that the incus has been detached, but still remains. It may be removed with the attic-scraper, which is to be introduced from below and passed up along the inner wall of the tympanum, when the distal extremity may be carried over the incus or malleus, if the latter bone remains, and by traction the ossicles can be detached. Polypoid masses, granulation-tissue, and the products of inflammation may now be removed with the cutting curette or cutting forceps, and the parts dressed with a four-per-cent. solution of cocaine to relieve pain. There is usually free bleeding during the operation, often sufficient to protract it and increase its difficulties. "The effect of injury or destruction to the chorda tympani nearly always manifests itself in some way," but in Dr. Sexton's experience it had never been of serious import. Disturbances of taste sometimes follow the operation, but they gradually disappear and leave the sense of taste unaffected.

The drum should be kept well cleansed, and light dressings of powdered boric acid applied until healing takes place. The salicylic acid powder may also be applied as freely as it can be borne. In some

cases this powder seems to irritate at first, but gradually a tolerance is established.

In the cure resulting from this treatment dermic transformation of the tympanum takes place, but mucus may occasionally gain admission from the Eustachian tube during head-catarrh or on blowing the nose. This should be frequently removed with absorbent cotton, and if necessary the drying application renewed for a time.

Dr. Sexton says he would not hesitate to perform this operation when the incudo-stapedial joint remains intact, unless a very considerable portion of the membrana vibrans is present.

PURULENT OTITIS SUBSEQUENT TO THE PUERPERAL STATE.

Bonnet reports (*Annales des Maladies de l' Oreille*, September, 1886) a case of a young primipara, 24 years old, who was delivered artificially, and with great suffering, of a dead child. Subsequently the patient seems to have been affected by absorption of purulent matter, because the antiseptic measures were not kept up long enough. The germs thus allowed to introduce themselves into the general organism from the affected uterus accomplished their migration in an insidious manner until their presence was suddenly and unexpectedly revealed by an attack of otitis media suppurativa on the left side four weeks after the departure of the patient from the Hôpital Bichât, Paris. From this otitis the vessels of the tympanum and of the neighboring osseous structures, direct or mediate tributaries of the inferior petrous sinuses, and those of the mastoid, to which the inflammation was also propagated, and which flow into the lateral sinus, were attacked first with peri- and then with endo-phlebitis. Propagation to the sinuses and extension to the internal jugular vein were not slow to follow. From this nidus, progressively developed, it is easy to follow the septic emboli, which, becoming detached, were finally arrested in the ramifications of the pulmonary artery, and thence infected the entire circulation.

The clinical observation of the case corresponded exactly with the aforesaid anatomical course of the disease.

The right hemisphere of the brain was congested, the left was pale. The arachnoid liquid was in normal proportions, and its limpidity was preserved. There was neither meningeal nor cortical lesion apparent. The meninges were not adherent. The cerebral hemispheres were normal. That portion of the left cerebellar hemisphere corresponding in position to the lateral sinus on this side showed on its surface a grayish spot about the size of a franc. This lesion was entirely superficial. The central portions were healthy, as were the entire right hemisphere and the isthmus of the brain. The medulla presented no macroscopic changes. On a level with the left lateral sinus, the internal surface of the dura mater presented a greenish-yellow discoloration over a space the size of two francs, and this discoloration extended to the point of the pyramid of the petrous part of the temporal bone. This membrane, which was but slightly adherent to the internal surface of the temporal bone, was easily lifted, and then revealed the fact that the descending portion of the lateral sinus had become transformed into a purulent nidus, extending posteriorly as far as the turn of the sinus, and anteriorly as far as the summit of the petrous pyramid, embracing the inferior petrosal sinus.

The osseous wall forming the external limit of the nidus displayed the slate color of superficial necrosis, and the dura mater forming its internal wall manifested no thinning nor perforation. Pus extended into the internal jugular vein, the walls of which were thickened and its cavity filled with a pyo-sanguinolent mass. The other sinuses contained liquid blood, with here and there non-adherent, non-purulent clots.

A series of sections of the mastoid and petrous portions of the temporal bone showed that the tissue of the mastoid was denser than normal, infiltrated with a slate-colored fluid, but without destruction of its cells, which contained no pus. The middle ear and the auditory canal were filled with pus. The uterus had not undergone complete involution nearly two months after delivery. The ear-disease set in about five weeks after the confinement.

Dr. Bonnet suggests that if the sulphate of quinia had been taken regularly and in larger doses, and had the antiseptic injections been repeated both in the ear and in the vagina, the number and intensity of the disease-germs might have been reduced, and the fatal result warded off, and finally an entire cure might have been effected.

A CASE OF APHASIA, WITH REMARKS.

Read before the New York State Medical Society, Third District Branch, meeting at Binghamton, Sept. 17, 1886,

BY S. M. HAND, M.D.,

Norwich, New York.

I WILL first report a case of aphasia which came under my observation, and then make some comments on its peculiarities which are points of interest in a study of this curious infirmity.

The case was Mrs. C. G., aged 57. On the 2d of May, 1878, she was suddenly seized with a severe pain in her head while sewing, and immediately fell from her chair. She was placed in bed; was drowsy, and for a time could not move her right side. Called to see her immediately, I found her almost insensible, with incomplete right hemiplegia. As she was a plethoric woman and in pretty strong, healthy condition prior to this attack, I bled her from the arm, taking about a quart of blood. After the bleeding she awoke to almost normal consciousness, and the power of motion in the affected side rapidly increased, so that within a few hours she had become able to raise her hand and move her foot, although it was difficult. About the third day she lost her speech, although she had previously been able to answer questions and express her wants. The paralysis then gradually increased until within a few hours she had complete hemiplegia of the right side, with total loss of speech, and could not express a thought by any means but gestures accompanied by utterance of the sound "lockey." She was confined to her bed three or four months, but appeared to have as perfect intelligence as usual, and gave attention to the concerns of the farm and the work about the house. For several months she could not articulate a single word, not even yes or no. On September 1 she had four convulsions within two hours, and the next day had three more; in the intervals she appeared clear in her mind. On the 15th of November she had one convulsion, but has been well since then to the present time.

Six or eight months from the hemiplegic attack she could only speak the word "no;" weeks afterwards she could say "yes," with the usual "lockey-lockey." After about two years had passed of this aphasic condition I asked her to pronounce the word "welcome," and she made the attempt, but only said "lockey-lockey," as usual. Then I asked her to speak it after me as quickly as possible after I spoke it, and as I pronounced the word she said "welcome" as perfectly and plainly as she had ever done; but pausing an instant, she had forgotten, and only could say "lockey-lockey," and shook her head, saying "no, no," and wept on account of her failure; still she could repeat not only it, but also many other words after I spoke them, if she did so quickly after hearing them pronounced. But from the commencement to the present she has not probably articulated more than a dozen different words. She has by accident spoken a word or two, but could not repeat them. The past year or two she has been able to call the name of her daughter Phœbe voluntarily when she desires to; yes and no and Phœbe are the only words that her vocabulary yet includes for her voluntary use, except "lockey," which she can speak very glibly; she can count and express numbers by raising her fingers. She has the same disability for reading and writing that she has for speaking; she cannot point out her own name in a column of women's names; although she can voluntarily speak her daughter's name, Phœbe, she is not able to recognize it when plainly printed; she cannot express a single word in writing, but can copy a letter or a word. Her general health appears to be perfectly good, so that she rides out and visits her friends as she did before the hemiplegic attack, and, save her hemiplegia and aphasia, she is apparently in good physical and intellectual health.

This case is important to us not on account of its treatment, but more particularly because it is one of a kind that illustrates the localization of brain-function, for it is, of course, recognized as a case of amnesic aphasia.

I had worked out the instructions of some of the different authors that treat of this disease, and had designed to use it in connection with the report of this case, but I find it so long that it would not warrant the expectation of your attention and patience.

The principal object of this compilation of sentiment and quotation of the opinions of authors is to call attention to the admitted conclusions of experimenters in regard to the localization of the functions of the brain, in order to reach one particular faculty that has more recently perhaps than many of the others received the attention of investigators,—*i.e.*, that of articulate speech,—and to locate the lesions due to the disease, or accompanying the disease, of the brain called aphasia.

There are various theories relating to the localization of the organ or organs of language. The process of speech is a very complicated action, including an appreciation of the meaning of words, the physiological activity of a speech-centre, and the action of those parts of the brain

which are concerned in the perception of the qualities of the object signified by the word, and an expression of the conception in articulate sounds or speech.

There are many derangements of speech, and each disability of whatever kind may have a specific name and a description.

Speech has been called "the mirror of the human mind" when it is correct and natural, but it is no more a mirror of the natural and healthy condition of the mind than it may be of the morbid disturbances of the same.

Delirium is a reflection of perverted conceptions; mania is a reflection of a wilder whirlwind of thought; while idiocy and dementia and imbecility and melancholia indicate a slow and torpid flow of ideas. In all these conditions speech indicates to us not the thought which the words properly express, but the condition of the organs which were concerned in the processes of the expression; and while the speech itself may be correct as to sound, it becomes a symptom of the disturbed condition of the perceptive and intellectual activities.

Hence Kussmaul divides all derangements of speech as an independent faculty into two kinds: those of articulation and those of diction.

Articulation is only a motor act by the external organs of speech. All lesions of articulation, such for instance as stammering, have been supposed to be what he calls *dysarthric disturbances of speech.* There may be mechanical defects in the speech-producing apparatus, such as hare-lip or fissured palate, or paralyzed vocal cords, or even defect of motor nerves that govern the power of expression. This he calls *dyslalia. Diction* is a compound action of both intellectual and sensory activity. It combines words with perceptions, and at the same time so arranges them in proper order that they give expression to the flow of thoughts. But this power is subject to derangement or disturbances, and either cannot at all or cannot correctly give expression to the thoughts. These conditions of articulation and diction become mixed in many ways. Sometimes disturbances of both articulation and diction exist in the same case. In another individual the thought may be faulty while the expression is correct. In still another the thought may be correct, but have a defective expression.

These disturbances in talking, whether of articulation or of diction, or mixed in the various ways that are possible and occasionally observed, Kussmaul calls by the general name of *dysphrasia.* He describes all the dysphrasic derangements of speech which are usually comprehended under the general name of aphasia as ataxic aphasia, amnesic aphasia, dumbness for words, paraphasia, agrammatism, akataphasia.

1. Ataxic aphasia is an incapacity for the motor co-ordination of words, and appears under his first division of derangement of articulation. In this form of aphasia the patient is unable to articulate words, and yet has the power to read written language or to communicate his ideas by writing.

2. Amnesic aphasia is an incapacity for the recollection of words, and appears under the second division. In this form of aphasia the patient is unable either to speak or to read or write words. The internal word is lacking in amnesic aphasia, while in ataxic aphasia the production of the word is affected. In amnesic aphasia there is an inability to call to mind the words of language, while in ataxic aphasia there is a loss of the motor power of articulation; while all the organs of speech in both kinds are retained, and the understanding and the comprehension of the patient is perfectly good and natural, and he is able to understand words and language when addressed by others.

3. Dumbness for words is an inability, with good hearing and sufficiently preserved intelligence, to understand words. The sound of the word is heard as in health, but the image of the thing which the word signified is not presented to the patient's mind readily, if at all.

4. Paraphasia is an inability to properly connect word-images and the corresponding conceptions; so that, instead of the ones which correspond to the sense, misplaced or entirely incomprehensible word-images present themselves to the patient, and he uses a medley of words without a consciousness of it.

5. Agrammatism is an inability to form words into sentences or arrange them in proper order.

According to this classification, the case reported is one of amnesic aphasia, in which the disturbance was of diction and not of articulation, either in the external organs of speech or in the motor activi-

ties, because my patient can repeat the word plainly when her memory is prompted by having it spoken in her hearing; and also because of the impossibility of speaking the word when seen in written form, or of knowing it when so seen, or of speaking it when suggested by a question or when produced by writing.

An editorial published in the *Medical Record* of September, 1885, contains a description of aphasia in new names and divisions. Instead of the two types of amnesic and ataxic first made out by Bouillaud, Trousseau, and Broca, it is recommended to drop them and use the newer terms of motor and sensory, or aphasia of transmission and aphasia of reception. It describes motor aphasia of two kinds: aphemia, or loss of memory of the co-ordinated movements necessary to speech, and agraphia, or loss of the co-ordinated movements of writing. It locates the lesion of aphemia at the foot of the third left frontal convolution, and the lesion of agraphia at the foot of the second left frontal convolution. The sensory aphasias are divided into two kinds: psychical (or word) blindness, and psychical (or word) deafness. In the first kind the patient talks and understands what is spoken to him, but cannot understand or read written language. Here the lesion is located in the left inferior parietal lobule. In psychical deafness the subject can talk and read, but does not understand spoken language. The lesion here is in the first left temporo-sphenoidal convolution.

These new phases of aphasia were found by Marce, Kussmaul, and Wernicke, and they called them sensory aphasia, and divided them, as above stated, into two forms, psychical deafness and psychical blindness. But the later works of Hammond and Foster and Loomis and Ferrier describe the aphasias under the old divisions. Perhaps the new divisions would more conveniently take in the almost endless variety of the defects of speech, and more definitely admit of classification under one type or the other. But the defects of language are so mixed and complicated that subdivisions would often be needed, or even a resort to the old divisions of Kussmaul for a nomenclature.

There is nearly a uniformity of agreement that there is a speech-centre, or that there is a right and a left speech-centre; but, out of all the teachings and speculations of these able investigators, is it not evident that there are right and left *speech-centres*, so that perception of the qualities of objects or sentiment originates in one area or centre, and that the word-image is originated in its own area or ganglia or centre, and that co-ordination of the speech-muscles as a faculty exists in still another? The medulla oblongata includes a centre for the power of respiration, with its neighboring convulsive centre, the vaso-motor centre, the cardio-inhibitory centre, and several other powers. These various functions, although of themselves simply physical and largely involuntary, may be excited to action by psychical agency in the hemispheres. So the function of speech-making has many united and co-ordinated processes when done in perfection, and many strange manifestations when disease or violence inhibits a part of the process and so interrupts the harmony of the different actions that results in articulate speech.

(To be continued.)

TRANSLATIONS.

TREATMENT OF IRITIS.—Trousseau has formulated the following treatment for iritis. In order to prevent synechia, a one-per-cent. solution of neutral sulphate of atropine is prescribed, of which two to three drops are to be instilled every hour into the eye. In case symptoms of toxic action of atropine appear, morphine may be given hypodermically and coffee-infusion used as a throat-wash. Duboisine may be substituted for the atropine, and used in the same manner, without giving rise to unpleasant symptoms. It is a good precaution at the moment of the instillation always to compress the lachrymal sac, so as to prevent the collyrium from entering the nasal fossæ and the throat.

The pain may be relieved by (1) frictions upon the brow of extract of belladonna (one part) to ointment of mercury (three parts). Leeches may be applied to the temples with benefit, especially at the beginning. Warm applications to the eye, of cataplasms or compresses made with an infusion of the leaves of belladonna or hyoscyamus, give great relief. In cases suffering severe pain, hypodermic injec-

tions of morphine and chloral internally may be needed.

When the exudations upon the iris are abundant, even if the patient be not syphilitic, systematic inunctions should be made daily with four grammes of mercurial ointment, and iodide of potassium (from eight to thirty grains daily) given internally. Rest in bed is often of service; purgatives are often useful.

If the iritis be of syphilitic origin, one or two pills of (five centigrammes) protiodide of mercury, or of one or two centigrammes of corrosive sublimate, or the sirop Gibert, according to the period of the syphilis. Salicylate of sodium may be given, three to six grammes daily, in rheumatic cases. If the disease tend to become chronic, the treatment should be insisted upon, and especial reliance given to alterants. In all cases it is necessary to protect the eye from exposure to the light.—*Revue de Thérapeutique*, No. 14.

On the Determination of the Absolute Acidity of the Fluids of the Animal Economy.—At a recent meeting of the Académie des Sciences, M. Berthelot read a note from M. A. Blariez which contained the following conclusions: It is impossible to determine in phosphoric acid the absolute proportion of the base, inasmuch as a molecule of fluid can combine, according to circumstances, with one or two equivalents of the base, or even more. The quantity of the base which combines with the acid is variable, and is influenced by the surrounding conditions. These experiments verify M. Berthelot's statements, made after his calorimetric researches on this substance.

Phosphoric acid and phosphates are contained in the constituent principles of the fluids of the animal organism. It is therefore impossible to determine the absolute acidity of these liquids in presence of bodies which combine with the base in quantities that vary according to the surrounding media to produce theoretical neutralization.

Hydrastis Canadensis in the Treatment of Uterine Congestions, Menorrhagia, and Metrorrhagia.—J. Chéron (*La France Médicale*, No. 91) writes enthusiastically with regard to the use of hydrastis in uterine disorders accompanied by congestions or hemorrhages. The dose is usually from fifteen to twenty drops of the tincture given three or four times a day. A good formula is the following:

℞ Tincturæ hydrastis, 4 gr.;
Elixir., 20 gr.;
Syrup., 30 gr.;
Aquæ destillatæ, 120 gr. M.

To be taken in eight doses in the course of two days. Or berberine phosphate or hydrastin hydrochlorate may be given in doses of two centigrammes; four pills a day, one at each time. Hydrastin may be given in ten-centigramme doses, in pill, several times daily. This medicament, so very useful in the cases just mentioned, is also a remarkable modifier of atonic dyspepsias and catarrh of the stomach, which is not to be despised when we contrast this action with that which is exerted upon the alimentary canal by the ergot of rye.

For Pigmentation of the Skin.—In a communication to the *Journal des Comm. Médicales*, Professor Henry Leloir recommends the following for the removal of melanodermia:

℞ Chloroformis, 100;
Acid. chrysophanic., 15. M.

The part is to be washed with tincture of green soap, or simply with alcohol, and the above solution applied to the surface. When dry, "traumaticine" (gutta-percha dissolved in chloroform) is painted over it as a protective, and when this comes off, in a few days, another application is made, and so on. This treatment is applicable only to the epithelial melanodermia. In the so-called dermic melanodermias (when the pigment is deposited in the derma and not the epidermis), its action appears to be null.—*Revue de Thérapeutique*, No. 14.

New Application of the Electro-Magnet.—In a case of a man who claimed to have swallowed an iron fork, M. Trouvé brought his ingenuity to bear upon the diagnosis, at the request of M. Polaillon. An electro-magnetic needle was deflected by the approach of the patient, and a large electro-magnet caused a slight arched projection of the surface of the abdomen, as if something inside were pressing outwards. Gastrotomy was successfully performed, and the stomach was relieved of a fork twenty-one centimetres long. The wound of the stomach was sutured and left free in the abdomen.

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EDITORIAL.

BACILLUS TYPHOSUS.

THE bacteriological studies of Eberth, Klebs, Koch, Meyer, Volkman, Gaffky, and others, have established the fact with a reasonable degree of certainty that in enteric fever a bacterium of characteristic morphological and biological traits, the *bacillus typhosus* of Eberth, is almost constantly present. This micro-organism occurs in the form of slender, mobile bacilli, 2.5 μ in length by 0.8 μ in width, which in cultures increase in length and then show worm-like movements (Huber-Becker). Under ordinary circumstances it does not form spores, but when kept for three or four days at the temperature of the body endogenous spores are developed. Unlike other bacteria, its capacity to retain aniline dyes is not increased by warmth. Gaffky states that these bacilli are best stained in an alkaline solution of methyl blue. Carl Seitz concludes an elaborate study of the whole subject of the etiology of enteric fever (Typhus-Aetiologie), from the bacteriological stand-point, with the following statements. In the greater number of the bodies of persons who have died of enteric fever collections of typhus bacilli are found in the different organs, and especially in the spleen. These micro-organisms may be detected in the tissues and isolated in pure cultures without difficulty. They are not found in other infectious diseases nor in other lesions of the intestinal tract. They are characterized by active movement, the peculiarity of their growth upon potato, great power of resistance to desiccation and to cold. To the question, Are these microbes the specific cause of enteric fever? it may be replied that, injected into the veins or given by the mouth, they are capable of causing morbid states in different kinds of animals. By means of infection through the blood-current, lesions presenting the microscopical appearance of enteric fever in the human body were produced. The small intestine, and especially its glandular structures, react to the infection *per os* and by way of the blood with changes resembling those of ileo-typhus. Assuming that the typhus-bacillus is the actual cause of enteric fever, the *abdominal typhus* of the Germans, we may, from experiments upon animals, very positively infer that the intestinal canal is the structure of access, since we here find the most pronounced changes, since the presence of this bacillus has been frequently here established in the living, and, finally, since here the conditions for its development appear to be the most favorable. Against the view that the bacilli find access to the organism by way of the respiratory tract is the fact that there are no marked primary pulmonary lesions.

Seitz concludes from his experimental studies that the typhus-bacillus may exert from the intestine outward, without passing into the blood-current, a deleterious or toxic influence upon the organism at large. This is the more probable since—as Hoffmann and Zenker have shown—the lesions of the various organs, except the spleen, in enteric fever are altogether out of proportion to the limited number of typhus-bacilli which can be discovered in their tissues.

Wolfhügel, Riedel, and Meade-Bolton have experimentally shown, and Michael has positively established in practice, that under favorable circumstances the bacilli multiply in water, and that in a less favorable temperature they preserve a continued existence. The long-recognized danger of infection by means of polluted drinking-water is thus placed

upon a scientific basis. Wolfhügel and Riedel, Auerbach, Green, and Shirley-Murphy have also demonstrated the possibility of the transmission of enteric fever by means of milk, which is a very favorable nidus for the typhus-bacilli. The danger of infection by means of the dejections, soiled linen, vessels, etc., is to be kept constantly in mind, while some clinicians go so far as to assert that the disease may be *directly* communicated from the patient to his attendants,—a view not generally held at present either by American or British physicians. Wagner and Pfeiffer have recently called attention to the important *rôle* which individuality and family predisposition play in the susceptibility to and toleration for enteric fever, a matter long since observed by Levick and others in this country.

The telluric influence—the part played by various soils—in the preservation and spread of the typhus-bacillus is yet to be worked out.

Much is yet to be done before the views of the more advanced bacteriologists can be finally accepted. But the evidence accumulates and light grows clearer. Are we soon to replace our hypothetical "infecting principle," our vague "contagium," by a positive, demonstrable entity in the causation of enteric fever, as has already been done in others of the group of the infectious diseases?

MEETING OF THE EXECUTIVE COMMITTEE OF THE NINTH INTERNATIONAL CONGRESS.

ON the 11th inst. an important meeting of the Executive Committee of the Ninth International Congress was held at Pittsburgh, in this State, at which the different parts of the country were well represented. It was found that affairs are progressing so well that at this date no doubt whatever can be entertained that a successful, creditable, and truly "international" Congress will be held, according to the terms of the invitation originally extended by the American Medical Association on behalf of the profession of these United States.

The Executive Committee had been quietly and earnestly at work, and had succeeded in perfecting the organization to such an extent that further meetings for this year were deemed unnecessary. Some minor details were assigned to various subcommittees, to report to the Committee, at Chicago, on the Monday preceding the next meeting of the American Medical Association. At the Pittsburgh session reports were made by the Presidents of the several Sections, showing a full organization, and a very gratifying array of able papers. The Committee on Arrangements at Washington was also fully organized, and reported much interest in the Congress taken by representative Washington physicians and numerous wealthy and influential citizens. Plans are being formed to secure much diminished rates from steamships and railroads, as well as at hotels. Even at this early date, there can be no doubt whatever of the successful results of the efforts to welcome and entertain our foreign guests in a suitable manner. The representatives of several foreign governments have already shown an active interest in the Congress, and the Belgian government has notified the United States authorities that Dr. L. Servais, of Amsterdam, has been appointed to represent Belgium; so that it is evident international preparations have auspiciously commenced.

From the energy and activity with which the preliminary organization of the Congress is being conducted, there can be no doubt of such an assembly as will be creditable to our country and to the medical profession of the United States. Sir Thomas Longmore, Sir Dyce Duckworth, Sir B. Walter Foster, Mr. Ernest Hart, Mr. John Eric Erichsen, Sir Joseph Fayrer, Morell Mackenzie, and Sir William Stokes are among those accepting from

Great Britain; whilst Charcot, Lieutaud, Dujardin-Beaumetz, Bordia, Bouchut, Cadet de Gassicourt, and Grancher represent France; and Monti, Vogel, Widehofer, Von Hebra, Liebreich, Oscar Lassar, Ottakar Chiari, and Schnitzler will illustrate, with very many others, the profession of Germany. Professor Moncorri at present represents Brazil, but many others are coming, and the promise of a large European representation grows daily.

The marked attention paid to Dr. Davis and other Americans at the meeting of the British Medical Association at Brighton, and the favorable attitude of the *British Medical Journal*, the *Lancet*, and some of the Continental journals, taken in conjunction with the decided change of tone in the comments made by some of the leading opponents of this Congress in this country, are favorable indications which are fully appreciated by its friends, as well as those of the American Medical Association.

LEADING ARTICLES.

HÆMOGLOBINURIA.

THE appearance of blood-coloring matter in the urine is the expression in most emphatic form of a preceding hæmoglobinæmia. In health the blood-plasma of man does not contain hæmoglobin, its yellow color being due to a pigment variously called lutein (Thudichum), hydrobilirubin (Maly), and cholетilin (MacMunn). The readiness with which the red corpuscles may be partially dissolved in the plasma varies greatly in different individuals. In some this may be accomplished by ligaturing one of the fingers and immersing it in ice-water; after which, a drop of blood taken from the finger-pulp will show decolorized corpuscles floating in a pink plasma. This experiment was repeatedly performed by Ehrlich upon a patient possessed of this abnormal susceptibility to the action of cold. In such an individual, a prolonged general exposure to cold—no greater than that to which all active persons are liable in the winter season—will cause so great a separation of coloring matter from the corpuscles that it makes its appearance in the urine. Hence the term *winter hæmaturia*, incorrectly applied to these cases. Hæmaturia—the presence of red blood-corpuscles in the urine—cannot occur without inflammation of some portion of the genito-urinary tract, or rupture of some part of its vascular apparatus; and in hæmoglobinuria there is neither. Excessive heat will also produce hæmoglobinuria, which has been often observed to follow extensive burns of the surface. Among the other numerous agents capable of producing this symptom may be mentioned certain edible fungi (morchella and helvella esculenta); potassium chlorate carelessly administered: inhalation of arseniuretted hydrogen; transfusion of alien blood; inunction of pyrogallic acid and naphthol; and the transfusion or hypodermic injection of glycerin, toluylendiamin, anilin, and dimethylanilin. Poisoning by phosphorus will also give rise to it. Among the diseases attended with this symptom are scorbutus, purpura, pyæmia, typhus, and, above all, the malarial fevers. The earliest reported cases of hæmoglobinuria—they were thought to be cases of *hæmaturia*—were due to malarial poisoning. Harley was the first to recognize the true nature of this symptom. In the Medico-Chirurgical Transactions, vol. xlviii. p. 161, he points out that it is the "hæmatoglobulin itself" which is excreted by the kidneys.

At the present time there is still a great deal of confusion and ignorance upon this subject; and it is the knowledge of this—a knowledge forced upon the writer by glaring misstatements in medical journals—that has led to the publication of this article.

It might be supposed that they who have the greatest opportunities for observing a disease would make the most valuable contributions to its pathology; but this is not the case. The reverse seems rather to obtain; for where a disease is rare, it attracts to its study those who are most capable of explaining the relations between its symptoms and lesions,—its pathology in the widest sense. The latter remarks are due to the fact that very little has been done by the physicians of warm latitudes to elucidate the pathology of malarial hæmoglobinuria, which is so common among them. A notable exception is Dr. Carl Heinemann, of Vera Cruz, who made some

valuable observations in the case of a boy æt. 15, which are recorded in *Virchow's Archiv*, Bd. cii. The rule holds good, however, that our principal knowledge of hæmoglobinuria has been contributed by men inhabiting countries in which this affection is rare.

Among the misstatements above referred to are the following. A practitioner, in reporting a well-marked case of malarial hæmoglobinuria, says that he begins to feel hope of a favorable termination as soon as the bowels begin to discharge black bile. The black, tar-like "bile" is undoubtedly altered hæmoglobin, which often appears in this situation, and even in the vagina, as was observed by Dr. Dreschfeld and Mr. Stocks, of Manchester, in a case of poisoning with potassium chlorate.* Another writer states, with reference to malarial hæmoglobinuria, "The urine is not bloody, but contains cholesterine. Dip a white cloth in it, you find the yellow copperas dye." What this means I have not the slightest idea. It sounds like the wanderings of a man who had been dreaming about the subject, or of one who had been made mad by much learning in connection with it. If this explanation is incorrect, it certainly shows how completely the subject is misunderstood by those whose opportunities for studying it are greatest.

In the opening sentence of this article it is stated that hæmoglobinuria is the most emphatic expression of hæmoglobinæmia. The adjective was used advisedly; for just as sugar may be present in the blood in unusual amount without glycosuria necessarily resulting, so hæmoglobinæmia may exist without hæmoglobinuria. It is only when the capacity of the spleen and liver for removing the excess of hæmoglobin is exhausted that this substance appears in the urine. It is probable that improved methods of research will lead to the detection of hæmoglobinæmia in many diseases in which its presence is not even suspected. Litten, in view of the well-known fact that the marrow is changed from yellow to red in certain cases of pernicious anæmia,—a disease in which increased destruction of red corpuscles is generally supposed to exist, although never positively demonstrated,—has suggested a spectroscopic examination of the blood-serum in this disease. The suggestion is a good one, and should be extended to all varieties of anæmia.

The diagnosis of hæmoglobinuria is made with the spectroscope and certain chemical tests,—namely, Heller's and the guaiacum test. The negative evidence furnished by the microscope—absence of red corpuscles—is not sufficient. It has been stated that the albumen of hæmoglobinuria differs from ordinary albumen in that it does not sink to the bottom of the urine, but "floats on the surface of the liquid in a long, ropy strand."

In the number of this journal for April 3, 1886, I endeavored to prove, and I think successfully, that the blood of pernicious anæmia affords an instance of the law of reversion. For the facts upon which this theory was based the inquirer is referred to the source mentioned. I stated that, so far as I knew, there was no other instance of genuine *tissue-reversion*, using the word "reversion" in its strict evolutionary sense, which is that the "adult organism possesses a character which is never assumed by the normal embryo, but which resembles an adult *ancestral* form to a degree which varies with the extent to which development has proceeded along the obsolete track." In diseases attended with hæmoglobinæmia, the blood of man comes to resemble that of the earthworm, showing that, in this affection at least, certain Biblical comparisons rest upon a biological foundation. The earthworm has red blood, but the plasma contains the hæmoglobin, while the corpuscles themselves are colorless.

The disorder produced by "matter out of place" in the inorganic world finds more than one parallel in the organic; but none more striking than that furnished by the affection under consideration. The substance hæmoglobin, which we are accustomed, and justly, to consider the most vital, is no sooner separated from the red corpuscles than it becomes a foreign body, to be got rid of as rapidly as possible. This process of excretion is at times extremely irritating to the organs concerned in it, and in the severest cases the hæmoglobin may block up the uriniferous tubules to such an extent as to cause complete anuria. The true meaning of the term "foreign body" is thus seen to signify not so much a body foreign to the organism as one out of place within it.

* Trans. International Medical Congress, London, 1881.

The jaundice which so frequently occurs in connection with hæmoglobinuria is undoubtedly of the hæmatogenous variety.

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NOTES FROM SPECIAL CORRESPONDENTS.

BOSTON.

THE educational season opened in this city about the 1st of October, both for the student and the practitioner of medicine. The classes at the Harvard Medical School remain in general about as they have averaged heretofore, but the "fourth year" gives evidence of increased popularity, inasmuch as some twenty men have enrolled themselves in it. This additional year of study gives no special advantage in the diploma which it bestows, but it offers clinical facilities in connection with most of the medical and surgical specialties analogous to those given in the ordinary polyclinics and post-graduate schools. Many students make this year cover also in part an externe service in connection with one of the hospitals.

Dr. R. T. Edes, of this city, who has just removed to Washington, resigned the chair of Clinical Medicine in the Harvard School. At his departure he was tendered a banquet by his colleagues of the medical faculty, by the staff of the City Hospital, and by the members of a small local medical club of which he had long been a member. The speaking was very flattering to the professional character of Dr. Edes. The important chair which he vacated in the University has not yet been filled.

The first meeting of the Section of the Suffolk District Medical Society in Clinical Medicine, Pathology, and Hygiene was held October 13, and was devoted to a consideration of the problem of water-filterage. An invitation to any of the general public interested had been given, and the result was an unusually full meeting. The discussion was opened by Professor W. T. Sedgwick, of the Institute of Technology, with an interesting paper. He took the ground that all the filters in use were merely strainers, removing more or less completely suspended matters but not bacteria. The "micro-membrane filter" was especially described, in which the filtering-material is asbestos in a very minute state of subdivision. Experiments showed that it completely decolorized a solution of ultramarine, a severe test for the decolorizing power of any filter, but there was no sufficient evidence that bacteria could be arrested by it; nor, in the opinion of Professor Sedgwick, was it necessary for the public health in the present state of the Boston water-supply that micro-organisms should be removed, even if that were possible. The inventors of various filters were given an opportunity to explain the features of their respective articles. Dr. Ernst, who had made some experiments on the sterilizing power of various filters in Koch's laboratory in Berlin, said that the conclusion there arrived at was that one filter only—viz., that of Chamberlin, of Paris, consisting of unglazed porcelain—possessed the power of arresting the transit of bacteria. After a continuous use of three weeks no micro-organisms were found to pass it. Other devices, such as animal charcoal, would arrest bacteria for a day or two, but after that they grew through the filter, and the total amount of these organisms in the effluent was greater than in water that had not been passed through a filter at all.

Since my last letter Dr. Charles D. Homans, a late president of the Massachusetts Medical Society, and a widely-honored and respected man and physician, has died. As the senior surgeon of the City Hospital, as president of the Humane Society, and in many other relations, he leaves a place difficult to be filled.

The trustees of Perkins Institution for the Blind, one of the most useful of our local charities, held their annual meeting on the 13th instant. There are at present one hundred and forty-six pupils and thirty-four blind teachers and other employés. A kindergarten for the blind has during the past year been the beneficiary by several charitable concerts and other entertainments in this city, at two or more of which the "Autocrat of the Breakfast-Table" read some of his admirable poems. A sufficient sum has been raised to erect a building for the use of the kindergarten, which will be completed in about three months.

At this meeting some very interesting exhibitions of the modes of study were given. Especial interest was shown in the method of teaching geometry and geography. The maps are of course in relief, and the pupils in describing them, and even in making them (in clay), appear to have some advantages in the conception which they gain of some of the physical characters of the countries over children who study geography simply from the ordinary maps.

One case of smallpox, the first in a considerable time, appeared here last week. It was a serious case, but was, as usual, promptly removed to the hospital.

The trustees of the City Hospital voted—October 14—adversely upon a petition for the establishment of homœopathic practice in the hospital, and favorably upon a petition to allow female medical students to be present at certain surgical operations in the amphitheatre, "with the proviso that the attending surgeon or physician may on any occasion reserve such cases as he deems improper for consideration in the presence of students of

both sexes to the end of the lecture, and before proceeding with them require the withdrawal of all male or female students, as the case may be."

As the result of investigations made by the trustees into the usage of other hospitals regarding the admission of women, the following facts are given:

Total number of hospitals which admit students to surgical operations	76
Number of hospitals which admit female students to surgical operations	46
Number of hospitals which do not admit female students to surgical operations	25
Number of hospitals which have no rule upon the subject and to which no female students have applied for admission	5

C. F. W.

October 15, 1886.

PROCEEDINGS OF SOCIETIES.

THE AMERICAN PUBLIC HEALTH ASSOCIATION.

IN 1884, the American Public Health Association, acting upon a suggestion made by the *Sanitary News*, extended an invitation to the sanitarians of the Dominion of Canada to join the Association. The invitation was heartily accepted, and Drs. C. W. Covernton and P. H. Bryce, President and Secretary respectively of the Provincial Board of Health of Ontario, attended the meeting at St. Louis as the representatives of the Dominion and Provincial governments. At the meeting in Washington last year Dr. Covernton was elected first vice-president of the Association, and it was decided to hold the meeting of the current year in the capital of Upper Canada.

The attendance at the meeting was somewhat less than usual, owing probably to the great distance of the meeting-place from the States where most of the active members of the Association live. There were, however, present members from California, Louisiana, Georgia, South Carolina, New Brunswick, Manitoba, Minnesota, and nearly all the intervening States. Dr. Russell, the Health Officer of Glasgow, Scotland, was also present, and was made an honorary member of the Association.

The meeting was called to order at ten o'clock on Tuesday, October 5, and after routine reports a paper by Dr. George Baird, of Wheeling, West Virginia, was read by Dr. James E. Reeves, on the "Destruction of Night-Soil and Garbage by Fire." The paper contained an account of practical experiments made in Wheeling to determine the best method of cremating the refuse of cities. It will be published in full in the *Times*.

The pollution of the water-supply and the sewerage of Toronto were very fully discussed in several papers, in which, however, very little new was developed.

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The annual address of the President, Dr. Henry P. Walcott, of Massachusetts, was an eloquent and scholarly discourse on the present necessities of sanitary science, and how they were to be provided for. There was enough to do, he said, in the directions where both science and experience have arrived at some definite conclusions; but advance in any quarter must necessarily be slow, made under the guidance of systematic experiments and observations controlled by scientific methods, and not in the pursuit of the speculations of theorizers. The principal object of scientific inquiry in preventive medicine during the past year has been, he said, as in the preceding year, the study of the infectious diseases and the micro-organisms associated with them. He went on to review what has been done and what is being done in the study of such diseases as cholera, smallpox, yellow fever, scarlet fever, rabies, and trichinosis. All these were of too much importance to be neglected by the guardians of the public health. To meet the present needs of sanitary science, the President advocated the undertaking by the general government of scientific investigations of diseases which are so general in their distribution that the whole country is affected by them, or of such character that the satisfactory inquiry into them would involve expenditures too great for the meagre appropriations of State and local boards of health. Some of the investigations carried on under the direction of the National Board of Health of the United States were of the highest scientific merit, and had an acknowledged authority everywhere. The public burden from the victims of the misuse of alcohol was becoming each day greater and more intolerable. Public measures of repression had thus far been of so little avail that it seemed to him fitting, on an occasion like that and with such an audience, to invoke for this most important subject the influence and teachings of the profession so largely represented there, and of all those whose business it was to help their fellow-men to healthy minds in healthy bodies. The President enumerated the matters affecting the public health in which a general government can exercise a beneficial control. He noted the advance which has been made in State medicine in Canada since the formation of the Ontario Board of Health in 1882. In regard to quarantine he said, "The recently published quarantine regulations of the Dominion are quite sufficient for your protection and for ours, if they are rigidly enforced. The vast sanitary importance of this highway to the West—the road by which cholera has once at least entered the country—cannot be overstated." He had noticed that there was one thing allowed here in Canada which experience, in his own State at least, had condemned: the presence of municipal councillors on local boards of health. He concluded

by calling attention to the great work which could be done by intelligent and fearless health authorities.

Dr. Salmon, of the Bureau of Animal Industry at Washington, read an interesting paper upon "Recent Investigations upon Hog-Cholera." He said recent discoveries showed that the disease was caused by bacteria. Sterilized culture-liquid used as an inoculant was found to protect pigeons against the living germs. The experiment had not been yet carried out to a conclusion in regard to protecting hogs. The microbes multiplied with extraordinary rapidity in water: about eight-fold in twenty-four hours. This experiment showed these germs had power of multiplying in ordinary drinking-water, such as is taken from our rivers and streams. A solution of mercuric iodide—proportion one to two millions—was found to destroy the germs. The question therefore suggested itself whether the fluids and tissues of hogs could not be so impregnated with this disinfectant as to render them absolute proof against the bacteria.

The Committee on Disinfectants reported that they had prepared descriptions, illustrated by diagrams, of all the different forms of apparatus used for disinfection by heat. The conclusions of the committee are as follows:

Apparatus for disinfection by heat may be divided into three classes: 1, those in which dry hot air is employed; 2, those in which moist hot air is used; and, 3, those in which steam is the disinfecting agent.

Dry hot air cannot be relied upon for disinfection when great penetrating power is required, as in disinfecting mattresses, feather-beds, and thick bundles of clothing or of cotton and woollen goods. Besides, dry hot air of a sufficiently high temperature to act as an efficient disinfectant often permanently injures textile fabrics and other objects requiring disinfection. The very recent investigations of Dr. Parsons and of Professor Max Wolff, of Berlin, fully attest the conclusions of the committee upon this point.

Notwithstanding these objections, dry hot air may probably often be used as a disinfectant with good results if the above-mentioned limitations be borne in mind. In no event, however, can dry heat be expected to prove an efficient disinfectant unless a temperature of above 110° C. (230° F.) has been maintained for upward of two hours.

In none of the various apparatuses designed for disinfection with dry hot air has a uniform distribution of heat in the disinfection-chamber been attained. In order to obviate this difficulty, some inventors and experimenters have rendered the hot air humid either by evaporating water in the chamber or by injecting steam into the same. By this means the distribution of heat is rendered more even, and its penetrating power is said to be increased.

In using hot-air apparatus, the fuel employed is of some importance. By the use of gas the heat can be maintained more equably than when coal, coke, or wood is used. The feeding of the furnace, when the latter forms of fuel are employed, allows a certain amount of cooling off, and hence a corresponding loss of heating-time. When the heat is furnished by a current of steam circulating through a steam-pipe properly disposed in the disinfecting-chamber, considerable uniformity in temperature can be maintained.

Apparatuses for disinfection by steam are of two sorts: those in which the steam passes through the disinfecting chamber without compression, and those in which it is confined by pressure. In the former the vapor is sometimes superheated by a secondary heating-apparatus, and this is probably equally efficient as steam under pressure. The experiments of Professor Wolff have shown that, with an apparatus in which the steam is not under pressure, an exposure of at least one hour is requisite for thorough disinfection.

The committee expressed its conviction, based upon the practical experience of some of its members, that the use of steam, especially when superheated or under pressure, is the most efficient agent for the destruction of all sorts of infectious material.

The Conference of State Boards of Health, which met at the same time as the Association, discussed the problem of "Inter-State Notification of Diseases," and adopted the following resolutions:

"1. *Whereas*, It is necessary for the protection and preservation of the public health that prompt information should be given of the existence of cholera, yellow fever, and smallpox, be it resolved that it is the sense of the National Conference of State Boards of Health that it is the duty of each State, provincial, and local Board of Health in any locality in which said diseases may at any time occur, to immediately furnish information of the existence of such diseases to Boards of Health of neighboring and provincial States and to the local board in such States as have no State Boards.

"2. *Resolved*, That upon rumor or report of the existence of pestilential disease, and positive, definite information thereon not being obtainable from the proper health authorities, this Conference recommend that the health officials of one State shall be privileged and justified to go into another State for the purpose of investigating and establishing the truth or falsity of such reports.

"3. *Resolved*, That, whenever practicable, the investigations made under the preceding section shall be done with the co-operation of the State or local health authorities.

"4. Any case which presents symptoms seriously suspicious of one of the aforenamed diseases shall be treated as suspicious and reported as provided for in cases announced as actual.

"5. Any case respecting which reputable and experienced physicians disagree as to whether the disease is or is not pestilential shall be reported as suspicious.

"6. Any case respecting which efforts are made to conceal its existence, full history, and true nature, shall be deemed suspicious and so acted upon.

"7. *Resolved*, That in accordance with the provisions of the foregoing resolutions, the Boards of Health of the United States and Canada represented at this Conference do pledge themselves to an interchange of information as herein provided."

These resolutions were also approved by the Association.

While the scientific work of the Association at the meeting just closed is hardly up to the average of previous meetings, the social entertainments were profuse and of the most enjoyable nature. In fact, the courtesies of the hospitable citizens of Toronto were so generously tendered as to interfere somewhat with the proper work of the Association. A large number of the members brought their wives and other feminine relatives, and the ladies of Toronto successfully vied with each other in making them feel at home. Although the Canadians live in a cold country, we have found that they have warm hearts.

The following officers were elected for the ensuing year: Major George M. Sternberg, Surgeon U.S.A., President; Vice-Presidents, Drs. C. N. Hewitt, of Minnesota, and C. A. Lindsley, of Connecticut; Dr. J. Berrien Lindsley, of Tennessee, and Dr. Irving A. Watson were re-elected as Treasurer and Secretary respectively. The Executive Committee consists of Drs. Henry B. Baker, of Michigan, Joseph Holt, of Louisiana, Hosmer A. Johnson, of Illinois, F. Montizambert, of Canada, George H. Rohé, of Maryland, and Colonel D. P. Hadden, of Tennessee.

The next meeting of the Association will be held in Memphis in November, 1887.

G. H. R.

TORONTO, CANADA, October 8, 1886.

PHILADELPHIA ACADEMY OF SURGERY.

A MEETING of the Philadelphia Academy of Surgery was held October 4, 1886, Dr. Thomas G. Morton in the chair.

Dr. James Collins exhibited a patient suffering with

AN ENORMOUS TUMOR OF THE RIGHT UPPER JAW,

and said: I wish to call the attention of the Fellows to this case. The patient, a lady 45 years of age, noticed, five years ago, frequent bleeding of the nose. There was also some difficulty in passing the collections of mucus, etc. She was treated in various ways, but soon a swelling made its appearance below the right eye. The tumor gradually increased in size, and two years ago my attention was called to it. There was then a large prominence, suggesting a tumor of the nostril. There is now a large tumor, involving the right side of the face, filling up one side of the nostril, and pressing upward so as to cause protrusion of the eyeball. The sight of the right eye has been lost for the past two years, and she has almost entirely lost hearing on the right side. When pressed upon, the tumor is soft and elastic, feeling like soft bone. Just inside the mouth is an opening which is disposed to bleed readily. There is not much pain connected with the growth, which in the past six months has developed rapidly. When I saw the case two years ago, the question of operation was considered. The friends wished positive assurance that the patient would be benefited; but this we were unable to give, and the operation was deferred. Within the last few months there has been a decided failure of general health and strength. By passing a finger into the antrum through the opening in the mouth, that cavity is found to be free and smooth. The growth seems to be a gradual enlargement of the bone itself rather than the result of pressure from within.

I should like to have an expression of opinion in reference to the correctness of our judgment in deciding not to operate two years ago. I would also request suggestions as to what should be done in the case further.

Dr. J. Ewing Mears: The appearance of this case is almost identical with that of one I had under my care in 1877, and upon which I operated. The history and appearance of this case would indicate that it is one of encephaloid tumor springing from the antrum, and that the pressure has produced absorption of the wall of the antrum. If the tumor were removed, there would be found a large opening, extending perhaps to the base of the cranial cavity. In the case on which I operated the tumor projected into the frontal sinuses, and had destroyed by absorption the anterior and posterior walls of the antrum. It also extended to the base of the cranium, so that, when I finished, I had my finger on the sphenoid bone and even in the sphenoidal cells. The patient lived ten days after the operation. I was called out of the city shortly after the operation, and when I returned I learned that the patient had died, it was said from pneumonia.

Dr. Charles B. Nancrede: I notice that the patient can move the eyeball. The portion of bone to which the muscles are attached must therefore be carried forward. The protrusion seems to be due not so much to bulging of the eyeball as to advancement of the entire cavity.

Dr. Mears: In the case to which I have referred, the eyeball was thrust out of its cavity, but all the motions were preserved. A tumor forcing its way into the orbit causes elonga-

tion of the muscular as well as of other tissues. I do not think it necessary that the point of origin of the muscles should be advanced.

I think that it is the judgment of surgeons who have much to do with jaw-surgery that in carcinoma of the upper jaw, including scirrhus and encephaloid, no operation should be performed; that in sarcoma, especially in children and young persons, an operation is frequently followed by success. In true carcinoma, operation is, as a rule, followed by recurrence. With regard to operation in this case at this time, I think that it could be performed, but the patient would probably not survive the operation long, even if she survived the shock of the operation. The return of the disease would probably be very rapid, as it would be practically impossible to remove all the disease. While the hemorrhage which attends removal of the upper jaw looks very formidable, I have experienced no trouble in controlling it. Pressure is usually sufficient, but in one or two instances ligature was required. I cannot recall a case of fatal hemorrhage following extraction of the upper jaw. Six years ago I removed the upper jaw of a girl eleven years of age. The tumor was examined by Professor S. W. Gross and found to be a spindle-cell sarcoma. There has been no return of the disease.

Dr. J. H. Packard: In 1877 I had a patient with a tumor of the orbit which appeared to originate from a clot of blood effused in a severe labor many years before. I have published a report of this case, with a sketch showing the appearance before and after operation. The eyeball was forced down on the cheek. I removed the tumor without difficulty and replaced the eye. I have seen the patient repeatedly since then, and everything has gone back to the normal condition. It seemed as though the muscles which had been stretched had recovered their tone. The sight had not been impaired by the tumor.

The origin of the deafness in the case presented to-night seems to be obscure, for there are no other symptoms indicating pressure at the base of the brain.

An operation in this case, it seems to me, would be one of great gravity. If the patient were suffering severe pain, an operation would be more positively indicated than it is under existing circumstances. The dangers of the operation would be very great, and it is possible that there would be hemorrhage which could not be controlled except with the cautery, and perhaps it could not be reached with this instrument. If the patient were willing to risk the operation and all its dangers, it might go far towards inducing the surgeon to operate; but an operation should not be urged in such a case. I agree with Dr. Mears as to the possibility of controlling the hemorrhage. I have never seen death result from hemorrhage in the removal of the upper jaw; but I have always been obliged to use the cautery. In this case there has been a change in the vessels. The point of hemorrhage may be removed from the vision, and it may be difficult to reach the vessels to apply the cautery. In the cases which I have seen, the hemorrhage has really been formidable. I have seen greater hemorrhage and more difficulty in arresting it in the removal of tumors of the jaw than in any other form of growth. I should not undertake such an operation without having the cautery at hand.

Dr. W. Joseph Hearn: The question of operation depends much upon the diagnosis. If this is an encephaloid growth, the operation is hardly justifiable; if it is a sarcoma (probably spindle-celled), I think that two years ago an operation would have been justifiable. In my service with Professor Gross I assisted him in several operations on what we then called recurrent fibroid tumors of the jaw. In one of these cases recurrence has not taken place. I think that at this time it would not be proper to perform an operation in this case.

Dr. Charles B. Nancrede: From the cases which I have seen, I would agree with Dr. Packard that the hemorrhage is apt to be severe. In some of the cases nothing but the repeated applications of the actual cautery checked it. In one case which I saw operated on, while the patient did not die on the table, he did practically die of hemorrhage.

Dr. Thomas G. Morton presented a patient who had made rapid and very satisfactory recovery from a

COMPOUND COMMINUTED FRACTURE OF THE CRANIUM.

This man, aged 47 years, was admitted to the Pennsylvania Hospital on September 7, with a compound, comminuted, depressed fracture of the upper portion of the right frontal bone. The injury was produced by a monkey-wrench falling from the fifth story of a building. The patient was admitted about two and one-half hours after the reception of the injury. I bring the case before you as an instance of immediate and primary union, with perfect recovery from the date of the first dressing. The dressing was not removed until the fourteenth day, although the patient was about the ward on the fourth day. The crown of the trephine used was as large as a five-cent piece. About twenty fragments were removed, and a large piece of the internal plate taken away. The opening left was as large as a quarter of a dollar.

The head was carefully shaved, and then washed with the bichloride solution (one to two thousand). The instruments were, as usual, boiled previous to operation and placed in a three-per-cent. solution of carbolic acid. After the operation the wound was thoroughly washed, first with a one-to-one-thousand solution and subsequently with a one-to-five-thou-

sand solution of the bichloride. The edges were carefully approximated, and two fine threads of catgut laid across the wound for drainage. The surface was then dusted with iodoform and covered with gauze soaked in the bichloride solution and dusted with the iodoform. Over this was placed a piece of Lister's gauze wet with a one-to-two-thousand solution, and secured with a bandage treated in the same way. A cotton dressing was then placed over this. The temperature did not go above 99°. When the bandage was removed the strands of catgut had disappeared.

I have brought the patient before you not only to show what I consider to be a remarkable instance of immediate union after such an injury, but also to suggest that if we can obtain through careful antisepsis primary union in compound comminuted fractures of the skull, we shall in large measure avoid the occurrence of fungus cerebri, which in reality is a low grade of inflammatory action.

Dr. Charles B. Nancrede: It is impossible to have fungus cerebri unless there is intracranial suppuration, with an increase of intracranial tension and softening of the brain-substance. If, as sometimes happens, the inflammation extends from without inward as a septic process, primary union of the wound will unquestionably stop it. If the primary injury is sufficient to produce the requisite amount of intracranial inflammation, fungus cerebri will occur in spite of the most careful treatment of the wound. Cases in which the projection is nothing more than a mass of granulations springing from the dura mater differ from true fungus cerebri, which contains brain-tissue. These latter cases are usually due to the original injury, and not to the inflammation from without. The hernia cerebri may even occur after the external wound has closed. Such a case is reported in the International Encyclopædia of Surgery. There are several cases on record where the destruction of bone, produced probably by a gumma, has resulted in hernia cerebri.

Two of my last three cases of hernia cerebri have recovered. I have prepared some statistics as to the mortality of this affection, showing that it is not so great as is generally supposed. Almost all the cases that have recovered have been treated practically on the let-alone plan. That was the method pursued in the cases under my care. I applied gentle pressure, antiseptic dressings, and mild astringents. Both of these patients have since had epilepsy. As far as I have followed out the microscopical pathology of this condition, the only barrier to further protrusion is the presence of the granulations, and every time they are removed you remove the barrier which nature has provided. The less these granulations are meddled with, the greater will be the chance of recovery.

Dr. Thomas G. Morton: I can perceive that there might be cases in which fungus cerebri occurred in the manner described; but I think by closing the wound immediately and removing all sources of irritation, fungus cerebri may be avoided in cases where it would otherwise have occurred. Even if the dura mater were injured, I think that under this method of treatment fungus cerebri would be less likely to develop.

I have seen a number of these cases. One case in a child six years of age, which I treated one year ago with the ligature, recovered. The ligature was applied every other day. In this case the dura mater was injured and considerable brain-substance was lost. The mental power was not impaired by the accident.

Dr. Mears: Since 1876, when I began to use the modified antiseptic dressing in St. Mary's Hospital, I have not seen a case of hernia cerebri, although I have had some eight or ten cases of compound comminuted fracture of the cranial walls, with injury to the dura mater and to the brain-substance. I do not know whether this is to be attributed to the use of antiseptics or whether it is simply a coincidence. In one case where the fracture was produced by the kick of a horse, I removed a piece of the inner table which was larger than a silver dollar. In order to get it through the opening in the external table, I was obliged to cut it with pliers and remove it piecemeal.

Dr. J. H. Brinton: During the past few years I have seen several cases of hernia cerebri. The most marked case was in an officer, in which the parietal bone of the right side was injured by a gunshot. The hernia was marked, and extended one and a half inches in height. Disintegration of the mass took place, and finally extended to the base of the projection, and I shaved it off, and the patient made a good recovery. There was no marked mental disturbance.

Adjourned.

NEW YORK ACADEMY OF MEDICINE.

AT a stated meeting of the Academy, October 7, 1886, the President, A. JACOBI, M.D., in the chair, a paper entitled

SOME PHASES OF CEREBRAL SYPHILIS

was read by JULIUS ALTHAUS, M.D., M.R.C.P., Corresponding Fellow of the Academy.

The author, after some introductory remarks, first spoke of the history of cerebral syphilis, and said that the disease had been only imperfectly recognized until after the middle of the nineteenth century, when a new era in the history of the subject began in the great impetus given the study of its pathological anatomy. It was then demonstrated that syphilis of the brain was not an inflammation, but that it bore throughout the character of a neoplasm. Syphiloma and arterial thrombosis cover, indeed, the immense ma-

jority of cases of cerebral syphilis met with in practice. A disappointing feature of Virchow's work is that he does not point out clearly the connection between the clinical signs and the pathological lesions of cerebral syphilis, and he appears to be only moderately acquainted with the modern doctrines of cerebral localization.

Coming more particularly to the subject of his paper, the author said that time would allow only of his considering syphilitic coma and syphilitic hemiplegia. That coma coming on more or less suddenly in an apparently healthy man, but one who had had unmistakable symptoms of venereal disease, might be a manifestation of the latter was a fact not generally known to the profession. Many causes of coma are mentioned in the text-books, while syphilis is not referred to; Fournier is almost the only author who has alluded to it, and he only briefly. But a knowledge of syphilitic coma is of great practical importance, inasmuch as it requires an entirely different treatment from that of other forms of coma, and an incorrect diagnosis is likely to seal the fate of the patient.

Dr. Althaus had seen, altogether, eight unmistakable cases of syphilitic coma, all in males between twenty-five and forty-two years of age. In every one there was a definite history of primary and secondary syphilis. In two cases no other cerebral symptoms occurred before the coma; the others suffered with giddiness, epileptiform convulsions, and transient loss of power in the limbs. Among the exciting causes of the attack he had noticed overwork, anxiety, trouble, sexual excess, and alcoholic habits. In two cases no exciting cause was ascertained; six were professional men; two were without regular occupation.

The symptoms were classified as: first, premonitory signs; second, symptoms of the initial stage; and, third, the symptoms of the final stage of coma.

He had noticed the following premonitory signs: a feeling of confusion, black specks before the eyes, sudden loss of sight for a short time, numbness in the limbs, some loss of mental power. In six cases there were such symptoms for a few hours or a day or two before the attack. The initial stage of coma set in during sleep; the patient was found in the morning on his back, apparently quite unconscious; he did not moan, nor throw himself back, nor put the hands to the head; his expression was blank, surface generally pale; sometimes he could be roused by shouting to him; he appeared to recognize the face of a friend better than that of a stranger; to loud interrogatories he might answer that he was blind, or only respond with a movement of the lips; the tongue was dry: dorsum covered with fur, except a few red papillæ: protruded slowly, but not deviated to one side; when put into his mouth, he generally succeeded in swallowing a small quantity of fluid; the eyelids were closed; on opening them the eyeballs seemed deeply retracted into the orbit, one more so than the other; their axes appeared to diverge, the greater the coma the greater the divergence; the pupils were small, insensitive to light; ophthalmoscopic examination at first was precluded, but when practised it revealed nothing unusual; the reflex irritability of the conjunctivæ was blunted and gone; the breath was offensive; the muscles were relaxed, and the body and limbs retained any position given them; the arms and legs offered no resistance, and fell heavily when dropped; there was no difference at all between the two sides of the body; there was no appearance of hemiplegia, rigidity, or tremor. In all the cases the sensibility and reflex excitability were greatly diminished or absent; the reflexes were wanting or were elicited with considerable difficulty. There was, either from the first or very soon, incontinence of the bowels and bladder, especially of the latter; occasionally there was constipation. The pulse was habitually slow, beating at the rate of 40, 50, or 60; its quality varied in different cases; it might be hard and wiry, or tolerably full, or small and feeble. Respiration was slow and shallow, the average rate being 8 or 10. The temperature was below the average, from 96° to 97° F. In two cases there was an eruption of herpes on the face; the skin was generally dry.

What, he asked, was the condition of the brain? It was evidently a complex one, for, while we have on the one hand the symptoms of paralysis, there are on the other hand symptoms of irritation of the nervous centres. The loss of consciousness and voluntary motion and sensation showed that the functions of the cineritious substance of the hemispheres, notably of the temporal and frontal lobes and frontal convolutions, were in a state of abeyance, while the state of the pulse, respiration, and temperature showed a condition of irritation in the medulla oblongata and pons Varolii.

The initial stage of syphilitic coma lasted in general from two to five days, and was followed by recovery or merged into the final stage, leading to death. In the former case the patient gradually began to show signs of returning consciousness; in ten days or a fortnight he might apparently be well. In other cases recovery was slower and less perfect; the speech remained indistinct and halting, the memory was weak, the patient did not take much interest in his affairs nor show much affection for his family: at times he appeared to realize his condition acutely, and burst out crying. Eventually, however, even in these least favorable cases the brain-power might be more or less restored, showing but little deterioration as compared with what it was previous to the attack. This is

the bright side of the picture; and as recovery takes place, the result of energetic antisyphilitic treatment, the physician may justly take to himself credit for having benefited the patient.

But there is also a dark side. In the unfavorable cases the patient gradually sinks into the final stage of syphilitic coma in a few days, characterized by intensification of the symptoms of unconsciousness, loss of voluntary power, sensation, and reflex excitability, while the signs of irritation of the pons and bulb change to those of a paralytic state of those organs; the face becomes livid and cyanosed, the conjunctivæ injected, insensitive to touch, the jaws fall apart, the power of swallowing is lost, there is excessive secretion of mucus or dryness of the lips and mouth, the surface of the body is bathed in clammy sweat, the pulse becomes small, feeble, quick, the respiration now becomes accelerated, perhaps stertorous, passing into Cheyne-Stokes type; hypostatic pneumonia may develop; the temperature rises to 104° to 108° F., the pupils become enlarged, and finally death occurs.

Of the eight cases of syphilitic coma which the author had seen, six ended in recovery, two in death in the first attack. In three of those which recovered from the first attack a relapse took place after some time, and one of them eventually died after having survived five such attacks in three years. He could not obtain an autopsy in either of the fatal cases.

Reasoning from analogy, however, it seemed to Dr. Althaus that the clinical history would warrant the inference that in these cases we have to do with an affection of an important cerebral artery which becomes gradually occluded by the syphilitic deposit, and that probably the vessel principally implicated is the basilar artery, which supplies the vitally most important parts of the brain. Sudden occlusion of this artery by inflammation leads rapidly to a fatal result, the principal symptom being profound coma from the beginning of the illness; but when a specific deposit takes place in the basilar artery, it seems that much more time is required to produce occlusion. But while this seemed to him to be the explanation of syphilitic coma, he admitted that the view wanted the proof of ocular inspection.

The author then took up the subject of diagnosis, and said that the cases which are most likely to be confounded with syphilitic coma are those in which hemorrhage takes place into the pons, also some cases of opium-poisoning. Other conditions he mentioned were hystero-epilepsy, alcoholic coma, uræmic coma, and diabetic coma. In opium-coma the pupils are extremely contracted; not so in syphilitic coma. In the former itching of the skin and suppression of urine occur; in alcoholic coma there is the odor of alcohol in the urine, and the pupil is enlarged. The diagnosis is not difficult in uræmic coma if the history is known; there are attacks and remissions, and not the dead-level unconsciousness seen in syphilitic coma. Acetone in the breath and urine accompanies one form of diabetic coma.

The prognosis of syphilitic coma is always grave. The disease shows that the poison of syphilis has insinuated itself into the cerebral arteries, and that eventually there will very likely be a return of the attack. The prognosis of an individual attack is on the whole not very unfavorable, more especially if the patient will accept specific treatment at the outset.

The treatment is partly symptomatic and partly antisyphilitic. The patient should receive at regular intervals easily-digested substances. If he appear to be in imminent danger of death, hypodermic injections of ether may sometimes turn the balance in his favor. Blisters to the back of the neck or on the forehead sometimes appeared to yield beneficial results. The douche appeared to do more harm than good. The principal part of the treatment is the specific, and it consists in the administration of mercury, either by inunction or hypodermic injection. For inunctions the old-fashioned blue ointment is efficient, and he considered a solution of the perchloride the best preparation for hypodermic injection thrown deeply into the substance of the glutei muscles. Other forms of mercury might be employed if preferred.

Some clinical peculiarities of syphilitic hemiplegia as compared with ordinary hemiplegia constituted the subject of the second part of the paper. The immense majority of the patients of this form are males (ninety-five per cent.), while both sexes are about equally represented in ordinary hemiplegia. Most of the patients with syphilitic hemiplegia are young. A peculiar behavior of the deep reflex tendon phenomena has been observed: the occurrence of hemiplegia on one side, with a paralytic affection of the muscles of the eye on the other side, is very significant of syphilis. The author cited cases illustrating different forms of syphilitic hemiplegia, some in which the attack came on suddenly, others in which it came on slowly, etc., and said that while in twenty cases of ordinary hemiplegia taken quite promiscuously all are very much alike, there is hardly a case of syphilitic hemiplegia which exactly resembles another, and it is this extraordinary variety in their clinical aspect which constitutes one of the peculiar features of cases of syphilitic hemiplegia.

Specific treatment failed to cure a very considerable number of cases where there could be no doubt whatever about the specific nature of the complaint. One pathognomonic symptom of syphilitic hemiplegia distinguishing it from ordinary hemiplegia is the presence of excessive exaggeration of the deep-tendon phenomena; the exaggerated response

occurs in the upper as well as the lower extremities.

Regarding treatment, it was a singular fact that while therapeutical results were sometimes very gratifying, they were at other times just the reverse. The cases taught the importance of instituting early specific treatment in all cases of syphilis, in order to avoid secondary lesions, with their attendant symptoms.

Dr. R. W. AMIDON was asked to open the discussion, and said there was one cause of syphilitic coma not mentioned by the author, but which had often forced itself upon his mind,—namely, a weak heart. The occluding disease of the arteries was very well known; but that of itself would hardly account for the very sudden onset of the coma, but when combined with a weak heart the sudden onset of the symptom was well explained.

Dr. A. D. ROCKWELL cited a case of hemiplegia, with facial paralysis and aphasia, which he thought was due to syphilis.

Dr. TAYLOR, speaking of the history of cerebral syphilis, expressed the opinion that the author of the paper had not given sufficient credit to writers previous to the nineteenth century. An admirable digest of the history of syphilitic inflammation of the cerebral arteries would be found in Guy's Hospital Reports for 1879–80. The author's description of syphilitic coma was admirable: he had nothing to add to it. His divisions of hemiplegia were clear and readily understood, but he thought we had the same told us in this country years ago (as early as 1871–72), as the result of the observations of Drs. Van Buren and Keyes, as could be seen in a valuable paper by Dr. Keyes on this subject, in which he spoke of the early age at which syphilitic hemiplegia came on, its gradual development without loss of consciousness, etc.

Dr. Taylor thought there were also other factors in the production of the brain-disease described by the author, the coma, the syphilitic dementia, the general paresis of the insane; such aggravating causes as sexual excess, unnatural sexual habits, and alcoholismus. These three factors go together in the causation of diseases called syphilitic nervous affections.

Dr. L. C. GRAY thought the question as to the exact condition of the brain in syphilitic coma was one on which we yet needed a good deal of light. With regard to the condition of the brain in syphilitic affections, we are generally warranted in attributing them to some precedent arterial trouble; yet in many cases, especially in those in which there is a tendency to coma, the textural changes which take place in the brain are out of all proportion to the changes found in the arteries. He had, last spring, made autopsies upon two cases, neither of which was exactly a typical case of syphilitic coma as described by Dr. Althaus; but in both cases the coma was the main symptom, while the paralytic symptoms appeared later and were entirely secondary. In both he found disease of the cerebral arteries, in one the disease being manifest to the unaided eye as well as under the microscope. But in neither case was the arterial change sufficient to account for the textural disturbance in the brain. In one the textural change was greatly out of proportion to the arterial change; there was very considerable softening, rendering the brain almost pultaceous. In one, besides considerable softening, there were a few patches of meningitis seen in the pia mater; in the other there were not only here and there a few patches of lepto-meningitis, but there were syphilitic gummata forming neoplasms. He therefore thought that the mere theory of some occlusion of the basilar artery was not sufficient to explain the supervention of coma. While a thrombus, an embolus, or gradual proliferation might produce coma, the existence of these conditions in the basilar artery seems unnecessary in order to account for syphilitic coma.

Among the many interesting points in the paper which had attracted his attention was one relating to therapeutics. He had been quite astonished to hear Dr. Althaus speak so favorably of the use of mercury while he had not dwelt to any great extent upon the use of the iodide of potassium, and in this regard he believed the author's views were at variance with those entertained generally by the profession in this country. He had had some experience in the treatment of nervous syphilis, and must say that he had failed to observe any benefit whatever resulting from any mercurial preparation in the treatment of brain-syphilis, whether it came on early or late; but he had found indubitable evidence of the value of the iodide over mercury.

Dr. L. PUTZELL agreed entirely with the reader of the paper regarding therapeutics. He had found that after giving the iodide of potassium, even in large doses, the symptoms did not yield, or yielded very slowly, until mercury was used. Regarding the probable pathology in syphilitic coma, it seemed to him that if the symptoms were purely the result of a thrombus in the basilar artery, there would be more distinct evidence of invasion of the pons and bulbar symptoms. A number of the vessels at the base of the brain being affected, not to the extent of producing occlusion, but causing impaired nutrition, would, he thought, explain the symptoms up to the fatal event, this being probably the direct result of complete occlusion.

AT the Semi-Annual Meeting of the Pathological Society of Philadelphia, held last Wednesday evening, Dr. William Osler read a paper on "Changes in the Blood in Malaria." The meeting was well attended, and a general discussion ensued.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

SPECIAL MEETING, OCTOBER 18, 1886.

The President, DANIEL LEWIS, M.D., in the chair.

JULIUS ALTHAUS, M.D., F.R.C.P., of London, read a paper on

TETANY AND TETANILLA,

in which he said that tetany was only of recent years recognized as a distinct disease, although it probably had existed, as had tetanus, even in ancient times. It was not of frequent occurrence, but owing to its gravity it was important that the physician should be acquainted with its clinical history and treatment. But little was known as yet of its pathology. After a brief review of the history of tetany, in which he gave priority of discovery to Steinheim, Dr. Althaus proceeded to speak of the symptoms, and said that he had seen altogether ten cases of the affection. Four occurred in males, six in females.

Tetany consisted of a succession of attacks of tonic spasm or rigidity of certain groups of muscles, mostly symmetrical, which followed one another at somewhat irregular intervals, there being between the spasms a period of relaxation. There was not loss of consciousness, but there was undue excitability of the motor nerves and muscles.

The chief cause of tetany was certain kinds of irritation coming on in an otherwise enfeebled nervous system. Thus it occurred after diarrhœa, more especially in ill-fed and half-starved children of the poor; also with intestinal worms, or in the nursing woman or at menstruation, after typhoid fever, etc. Another active agent in the production of the complaint was cold; emotional influence was a causative element in two of his cases. Epidemics of tetany had been described, but such cases were probably cases of other diseases, as hysteria or cerebro-spinal meningitis; but several cases of tetany might occur together, due to the exciting factor of cold. Weiss had found four cases of tetany in patients who had had their enlarged thyroid glands extirpated by Billroth, and certain symptoms of tetany had manifested themselves in one patient suffering with myxœdema; it was therefore an interesting question whether there was a more intimate relation between absence or atrophy of the thyroid gland and tetany than had hitherto been assumed.

Tetany had no connection at all with certain occupations, as it occurred in persons following various pursuits. It most frequently occurred between the ages of one and five years, and again between ten and fifteen years; females were more liable to it than males.

A review of the determining causes could not help but lead to the conclusion that a constitutional predisposition must be present in order that cold, diarrhœa, etc., could lead to the outbreak of tetany. In not a single case under his care was there an hereditary history of tetany, but in five out of the ten cases there was such a disease as hysteria, migraine, epilepsy, or chorea in some member of the family. In addition to this, the paternal grandfather of one other patient had died insane, and in another case the parents were first-cousins. It was therefore to be seen that in only three cases out of ten was the family apparently free from a neurotic taint.

The violent symptoms of tetany might develop rapidly or come on gradually, and in those cases in which the cause had acted suddenly the disease was more likely to be at once fully developed, whereas in the cases in which the nervous system became more gradually undermined there was progression of the symptoms to their severer degree of manifestation. Among the premonitory symptoms were found more particularly a feeling of malaise, of some impending illness, headache, drowsiness, perhaps stiffness of some of the muscles, with shooting pains in the limbs. These symptoms gradually became aggravated, and tetany then set in. Both hands assumed a peculiar position, though not always the same, varying according to the several groups of muscles affected. In most cases it was the muscles supplied by the ulnar nerve which suffered, in some those under the control of the median, while only very occasionally those which received their motor impulse through the musculo-spiral were affected: therefore a common position of the hand in tetany was a conical one, the thumb being forcibly adducted, the fingers pressed against the thumb, the wrist bent and turned towards the ulnar side of the arm. The condition might stop there or proceed higher up, the forearm be bent, the arms strongly adducted to the body. While a considerable variety of positions might be produced according to the muscles affected, there was in true cases of tetanus always some degree of rigidity in the muscles supplied by the ulnar nerve, and where this was entirely wanting the case was probably not one of tetany. The muscles of the lower limbs might also be affected, causing flexion of the toes, the heels to be drawn up, or the toes might be widely separated, the knees extended, etc. In some cases only one side of the body was affected, or only the upper limbs, or the lower, or the limbs might be affected alternately, but usually there was symmetrical affection of both sides of the body. In the large majority of cases only the muscles of the extremities were affected, but in some those of the head and body were involved. In extreme instances there was spasm of the glottis and dyspnœa, and the diaphragm and other mus-

cles of respiration appeared to be fixed. If the patient was not speedily relieved, death would take place from apnœa. Even the bladder might be affected. A very severe attack sometimes ended in profuse perspiration. The contraction of the muscles was sometimes very painful, more especially in children; in other cases there was only a stiff and bruised feeling, with tenderness on pressure. The degree of contracture might vary from one minute to another; in some cases the patient lay stiff in bed like a statue; in some the degree of muscular spasm was moderate, allowing of some movement. To overcome the rigidity caused pain. Sudden impressions by cold and heat would arrest the spasm for a moment. The duration of the attack was variable; it might last only five minutes, or as many hours; where it had been said to have lasted days together, there probably had been brief intervals of relaxation unnoticed by the attendant; otherwise he should say the case was not one of tetany.

Regarding Trousseau's symptom, causing the spasm by tightly bandaging the leg, Dr. Althaus thought it might be produced by either pressure on the blood-vessels or nerves, but compression of the femoral artery brought about muscular rigidity much more quickly than did compression of the nerve in the sciatic notch. Trousseau's symptom was one diagnostic mark between tetany and hysterical contracture: in the latter the use of the Esmarch bandage being followed by relief from the contracture. The electrical and mechanical excitability of the nerves and muscles was enhanced. If the electrical currents had become again normal, it might be concluded that the patient had recovered. The mechanical irritability was especially marked along the portio dura, even when it had not been previously affected during the disease; during the free intervals there was decided loss of muscular power, together with a feeling of lassitude.

While tetany showed a great variety of symptoms in the motor sphere, these were much less conspicuous in that of sensibility. Some patients claimed that pain was insignificant, but it was usually to be elicited over the spine, particularly the seventh cervical vertebra. Feelings of cold and heat, etc., were sometimes present, sometimes absent; sometimes there was redness and œdematous swelling, more especially of the joints of the fingers and toes, leading us to suspect rheumatic fever. The temperature might rise as high as 101° F., or higher, in severe cases. Usually the secretions did not manifest any morbid change.

A few cases of tetany had ended fatally, but precise pathological data had not been obtained. The great diversity and variety of changes found was in itself proof that we had not yet discovered the lesion of tetany; while other considerations led him to think that, if there was a particular lesion, it was one causing only a functional disturbance in the giant-cells of the anterior horns of gray matter in the cord. Hughlings-Jackson's theory regarding the cerebellum as being the seat of the trouble he thought was far-fetched.

The diagnosis of tetany was not always easy. We had to rely chiefly on the paroxysmal occurrence of the spasms, the peculiar fact that it spread from the periphery to the centre, on Trousseau's symptom, and on the electrical and mechanical excitability of the nerves and muscles. It was to be distinguished from epilepsy, cerebro-spinal meningitis, rheumatism, tetanus.

Passing to the symptoms of tetanilla, the author said it occurred in neurotic patients, frequently in those addicted to masturbation. In some cases there was no apparent cause for it. Unlike tetany, in it the spasms were clonic; there was absence of prolonged muscular resistance and Trousseau's symptom. The convulsions were symmetrical, and ceased during sleep. There was generally impaired motor power or power of co-ordination. The nutrition of the muscles was normal, but the excitability was increased, and the knee-jerk more especially was exaggerated. The degree of spasm varied. In some cases it was slight, in others of considerable severity; in some temporary, in others almost incessant. The flexors of the hands were frequently involved, sometimes the deltoid; and, indeed, none of the muscles of the body were exempt. Perfect rest gave the greatest ease; while walking, using the hands, etc., were liable to increase the spasms. The patient might be unable to follow his occupation, but it was chiefly the moral influence from which the patient most suffered, fearing a cerebral tumor, progressive muscular atrophy, etc. All of his patients had recovered but one. In this one the disease commenced when he was sixteen, and there were now and then recurrences, although his general health was good, at the age of fifty-four years. He was disposed to think that tetanilla was due to the same condition as tetany, only in a less marked degree: namely, a disturbance of nutrition in the giant-cells of the anterior horns of gray matter.

As to the prognosis in tetany, most persons recovered within two or three months, especially if under favorable circumstances. He recommended, as treatment, healthful surroundings, nourishing food, special treatment for special conditions; chloral hydrate was better than morphine as a direct sedative; iodide and bromide of potassium had been useful in some cases. Electricity had frequently been employed without success when applied to the affected nerves and muscles, while the application of the large anode to the spine, with the cathode at a distance, seemed to have a much better sedative effect. For cutting off an attack of tetany threaten-

ing life, nothing was equal to the subcutaneous injection of pilocarpine. As soon as profuse perspiration was established the spasm ceased. The treatment of tetanilla should be chiefly mental, especially assuring the patient there was nothing wrong with his brain.

Dr. W. A. Hammond said it would be impossible for him to add anything to the very graphic description Dr. Althaus had given of tetany. He thought he had seen a good many cases of tetany; but he had only recognized four, the other cases having come under observation before he knew anything about the disease. It was his opinion that many of the cases recognized as tetanus during the time of the civil war were cases of tetany, for usually they recovered. He had seen probably forty or fifty such cases, and all had recovered. It was well known that the idiopathic variety of tetanus was more likely to be attended by recovery than the traumatic variety.

Dr. Hammond gave some of the differential points between tetany and tetanus: among others, the commencement and principal seat of the affection being in the lower jaw in tetanus; in tetanus there was epigastric distress; the more marked reflex excitability in tetanus; and in tetany he had almost always found some disturbance of sensibility, paræsthesia and anæsthesia.

As to the probable seat of the disease, he could not conceive how it could be due, as supposed by Dr. Althaus, to a change in the giant-cells of the anterior horns. Dr. Hammond was rather disposed to think it existed in the cells of the antero-lateral columns, but not confined there; extending also to some extent to the posterior columns.

Of the cases which he had seen, two recovered probably without benefit from the drugs administered; two recovered promptly within four or five days after the administration of large doses (one-hundred-grain doses) of bromide of potassium.

Dr. E. Darwin Hudson did not think that clinicians generally could accept tetany as a distinct disease. The symptoms which it included, as given by different authors, were too varied.

Remarks were also made by Dr. Heitzmann, Dr. Corning, and Dr. John C. Peters, and the discussion was closed by the author, who said that in England they would not dare administer one-hundred-grain doses of bromide of potassium.

CONTRA-INDICATION TO THE USE OF PARALDEHYDE.—Sommer (*Neur. Centr.*, No. 11) concludes that paraldehyde ought not to be given to patients presenting atheromatous defects, and should not be employed in connection with alcoholic liquids. Eickholdt holds that the presence of vaso-paralytic symptoms precludes the employment of paraldehyde.

REVIEWS AND BOOK NOTICES.

A TREATISE ON THE PRINCIPLES AND PRACTICE OF MEDICINE, DESIGNED FOR THE USE OF PRACTITIONERS AND STUDENTS OF MEDICINE. By AUSTIN FLINT, M.D., LL.D. Sixth Edition, Revised and largely Rewritten by the Author, Assisted by WILLIAM H. WELCH, M.D., etc., and AUSTIN FLINT, M.D., LL.D. Philadelphia, Lea Brothers & Co., 1886. 8vo, pp. 1160.

By careful condensation and rearrangement, and by the omission of obsolete matter, much new and valuable material has been added to the present edition without increasing its bulk. Among the new articles special attention is attracted to the following: Infectious Tumors, Syphilitic Disease of the Lungs, Cerebral Syphilis, General Considerations relating to Inflammatory and Structural Disease of the Spinal Cord, Spastic Cerebral Paralysis of Children, Hereditary Ataxia, Myxœdema, Multiple Neuritis, General Pathology of Pyrexia, and Milk-Sickness. In addition to these, the entire work had been revised by the author previous to his death, and many articles rewritten. As with the preceding edition, the present has had the advantage of revision in conjunction with Dr. Welch, of Johns Hopkins University, who contributes also the first seven chapters and part of the eighth. It was issued under the immediate supervision of Dr. Welch and the author's son, Professor Flint, of Bellevue College, New York. Some diagrams have been introduced to elucidate the subject of the physical diagnosis of cerebral diseases.

By the use of small, though clear, type and the sparing use of illustrations, it has been found possible to present in one volume a work on the practice of medicine which is encyclopædic in its fulness. As a text-book or work of reference upon medical practice, it is the favorite with students and has received abundant evidence of appreciation by the profession.

INSOMNIA, AND OTHER DISORDERS OF SLEEP. By HENRY M. LYMAN, A.M., M.D. Chicago, W. T. Keener, 1885. Small 8vo, pp. 239.

This very interesting essay of seven chapters is more comprehensive than its title would indicate. The physiology of sleep, the ordinary agencies which disturb repose, and the devices for removing or overcoming them by moral and medical means occupy the first three chapters, the remaining four being devoted to the treatment of insomnia in particular diseases, a consideration of dreams, somnambulism, and artificial somnambulism or hypnotism. Recent investigations in telepathy are elucidated by clinical cases, and metaphysical healing is explained by the author upon logical grounds.

MISCELLANY.

PROFESSOR E. WILLIAMS, OF CINCINNATI.—It is announced that, owing to the precarious state of his health, Dr. Williams has been obliged to relinquish professional engagements and to visit California. He has also resigned his presidency of the Section on Ophthalmology in the International Medical Congress, a step that causes universal regret.

DR. D. HAYES AGNEW has purchased the residence of Dr. R. J. Levis, on the northwest corner of Sixteenth and Walnut Streets, Philadelphia, and will shortly remove his office to this place. Dr. Levis has gone to Europe for a prolonged stay.

NOTES AND QUERIES.

IN MEMORY OF DR. F. H. HAMILTON.

The Society of Medical Jurisprudence and State Medicine held a meeting in memory of Dr. Frank H. Hamilton, its late President, at the Hall of the Academy of Medicine, New York, September 30, 1886. The opening address was made by the Hon. Amos G. Hull, Vice-President of the Society; after which Dr. Charles A. Leale, President of the New York County Medical Association, delivered an extended eulogy of Dr. Hamilton, in the course of which he gave an exhaustive review of his career and his eminent services to surgery and to the profession and society at large. The Secretary, Dr. G. W. Wells, then read a tribute to the deceased, prepared by General Calvin E. Pratt, which was followed by brief addresses by Drs. Austin Flint, John Shrady, C. S. Wood, Nathan Bozeman, Messrs. Kitchell and Russell, and by other members of the medical and legal professions.

The following resolutions, offered by Dr. Leale, who was the chairman of the Committee of Arrangements for the memorial meeting, were unanimously adopted:

"*Whereas*, The medical and legal professions have sustained a sad bereavement in the death of Professor Frank Hastings Hamilton, A.M., M.D., LL.D., late President of the Society of Medical Jurisprudence and State Medicine, which occurred at his residence on the eleventh day of August, 1886; and

"*Whereas*, It is eminently proper for us, in our associated as well as private relations, to express our great admiration of the life and character of one who has done so much to elevate Medico-Legal Science; therefore

"*Resolved*, That as a Society composed of members representing two of the learned professions which he labored so hard to advance and harmonize, we add our tribute of loving esteem.

"*Resolved*, That Dr. Hamilton, from his pre-eminent talents and his position as a teacher, writer, and practitioner, covering a period of over half a century, has been the means of deciding many perplexing questions coming properly within the jurisdiction of our Society, and has thereby greatly relieved the professions from the malice of unwarrantable litigations.

"*Resolved*, That the humanity, benevolence, and fixedness of purpose exhibited during many years of constant professional toil under numerous trying circumstances, ever with the sincere desire to promote his art and benefit mankind, have ennobled his character and left to us a name worthy of our highest emulation.

"*Resolved*, That the example of his life, diligent study in early youth, manifest desire to acquire knowledge by carefully searching the museums of America and Europe for anatomical specimens to settle disputes in surgical pathology, his translations of foreign medical works, his careful and accurate teachings united with a stern integrity ever to be truthful, and last, but not least, his monumental volumes on Fractures and Dislocations which have been the standard works recommended by colleges at home and abroad, and remain to-day unequalled in surgical literature, having been translated into many foreign languages, and are the acknowledged authorities wherever surgery or medical jurisprudence are taught,—these with many other honorable characteristics have justly endeared his memory to every true and faithful member of our professions, and placed his name upon the scroll of the illustrious men of the first century of American history."

OFFICIAL LIST

OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U.S. ARMY FROM OCTOBER 10, 1886, *TO OCTOBER* 23, 1886.

MAJOR WARREN WEBSTER, SURGEON.—Leave of absence on account of sickness further extended one year, on account of sickness. S. O. 244, A. G. O., October 20, 1886.

CAPTAIN DANIEL WEISEL, ASSISTANT-SURGEON.—Relieved from duty at Fort Steele, Wyoming, and ordered to proceed to and take station at Fort McKinney, Wyoming, reporting to the commanding officer of that post for duty. S. O. 135, Department of the Platte, October 15, 1886.

CAPTAIN B. D. TAYLOR, ASSISTANT-SURGEON.—From Department of the East to Columbus Barracks, Ohio.

CAPTAIN L. S. TESSON, ASSISTANT-SURGEON.—From Department of Texas to Department of the East.

FIRST-LIEUTENANT C. C. BARROWS, ASSISTANT-SURGEON.—From Department of Arizona to Department of the East.

FIRST-LIEUTENANT F. R. EGAN, ASSISTANT-SURGEON.—From Department of Arizona to Department of Texas.

FIRST-LIEUTENANT F. V. WALKER, ASSISTANT-SURGEON.—From Department of the East to Department of Texas. S. O. 244, A. G. O., October 20, 1886.

FIRST-LIEUTENANT E. C. CARTER, ASSISTANT-SURGEON.—Granted leave of absence for six months, with permission to apply for an extension and to go beyond sea, to take effect when his services can be spared. S. O. 244, A. G. O., October 20, 1886.

FIRST-LIEUTENANT EDWARD EVARTS, ASSISTANT-SURGEON.—Ordered to proceed to Fort Grant, Arizona Territory, and there take station. S. O. 94, Department of Arizona, October 1, 1886.

FIRST-LIEUTENANT W. W. R. FISHER, ASSISTANT-SURGEON.—Ordered, on expiration of his leave of absence, to report to the commanding officer at Fort Bidwell, California, for duty as post-surgeon. S. O. 93, Department of California, October 4, 1886.

FIRST-LIEUTENANT GUY L. EDIE, ASSISTANT-SURGEON.—Having returned from detached service in the Department of Arizona, will join his station at Fort McIntosh, Texas. S. O. 144, Department of Texas, October 13, 1886.

FIRST-LIEUTENANT CHARLES S. BLACK, ASSISTANT-SURGEON.—Granted leave of absence for two months on surgeon's certificate of disability, to take effect when his services can be spared. S. O. 244, A. G. O., October 20, 1886.

FIRST-LIEUTENANT ALONZO R. CHAPIN, ASSISTANT-SURGEON.—Relieved from duty at Fort Laramie, Wyoming, and ordered to Fort Washakir, Wyoming. S. O. 137, Department of the Platte, October 19, 1886.

FIRST-LIEUTENANT FRANCIS J. IVES, ASSISTANT-SURGEON.—In obedience to instructions received from the Division Commander, ordered to report in person at Headquarters, Department of the Platte, for duty. S. O. 146, Department of Texas, October 16, 1886.

FIRST-LIEUTENANT WILLIAM P. KENDALL, ASSISTANT-SURGEON.—Leave of absence extended fifteen days. S. O. 239, A. G. O., October 14, 1886.

FIRST-LIEUTENANT W. B. BANISTER, ASSISTANT-SURGEON.—Assigned to duty at Fort Wingate, New Mexico. S. O. 97, Department of Arizona, September 29, 1886.

FIRST-LIEUTENANT CHARLES F. MASON, ASSISTANT-SURGEON.—Relieved from temporary duty at Fort Verde, Arizona Territory, and ordered for duty at Fort Huachuca, Arizona Territory. S. O. 99, Department of Arizona, October 12, 1886.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U.S. MARINE HOSPITAL SERVICE FOR THE TWO WEEKS ENDED OCTOBER 23, 1886.

URQUHART, F. M., PASSED ASSISTANT-SURGEON.—Relieved from duty at Cape Charles Quarantine, to proceed to Washington, D.C., with steamer "Woodworth," October 20, 1886.

WASDIN, EUGENE, PASSED ASSISTANT-SURGEON.—Promoted and appointed Passed Assistant-Surgeon from October 1, 1886, October 20, 1886.

WILLIAMS, L. L., ASSISTANT-SURGEON.—Granted leave of absence for three days, October 16, 1886.